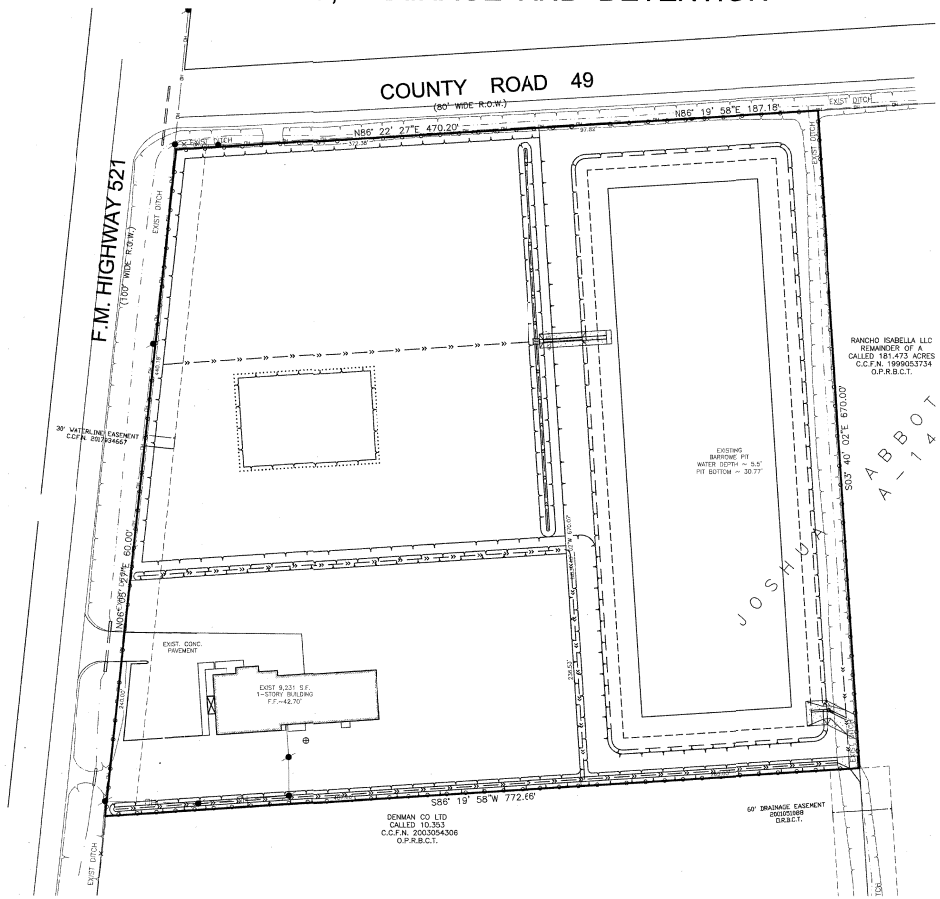
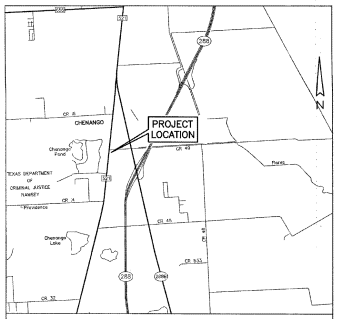
PROPOSED DEVELOPMENT FOR
I&D LEGACY COMMERCIAL PARK
C.R. 49 AT F.M. 521
COUNTY OF BRAZORIA COUNTY, TEXAS
GRADING, DRAINAGE AND DETENTION





VICINITY MAP
1" = 1.0 mi

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C.10	STORM SEWER DETAILS (1 OF 2)
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Commissioner's signature for final approval:

APPROVED BY BRAZORIA COUNTY DRAINAGE DISTRICT #5

Lee Walden, P.E. — Date 8/7/23 — President
Kerry Osburn — Date 8/7/23 — Vice President
Brandon Middleton — Date 8/7/23 — Secretary/Treasurer
Nazar Sajid — Date 8/7/23 — District Engineer

Note: Project field startup will start within 365 calendar days from date here shown. Continuous and reasonable field site work is expected.

BCDD 5 I.D. # B230048

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST. ANGLETON, TEXAS 77515
PHONE: (979) 849-5581 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS — RANDALL J. LISKA — 89374 — REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374
Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: N.T.S.
PROFILE:
HORIZONTAL:
VERTICAL:

I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

TITLE SHEET

PROJECT NO. 15313

TS

15313 SHEET SET.dwg

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR SHALL NOTIFY THE "UNDERGROUND UTILITY COORDINATING COMMITTEE" (TELEPHONE NO. (979) 849-4364 AND THE COUNTY OF BRAZORIA COUNTY (TELEPHONE NO. (979) 849-5711) 48 HOURS BEFORE STARTING WORK IN STREET RIGHT-OF-WAYS OR EASEMENTS.
2. ALL EXISTING UNDERGROUND UTILITIES ARE NOT GUARANTEED TO BE COMPLETE OR DEFINITE, BUT WERE OBTAINED FROM INFORMATION AVAILABLE, CONTRACTOR HAS SOLE RESPONSIBILITY FOR FIELD VERIFICATION OF ALL EXISTING FACILITIES SHOWN ON DRAWINGS. CONTRACTOR SHALL COORDINATE ALL CONFLICTS WITH THE APPROPRIATE GOVERNING AGENCY. NO SEPARATE PAY.
3. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATION, PART 1926, SUBPART P AS PUBLISHED IN THE FEDERAL REGISTER, VOLUME 54, NO. 209, DATED OCTOBER 31, 1989.
4. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TEXAS MUTCD MOST RECENT EDITION AS REVISED) DURING CONSTRUCTION.
5. CONTRACTOR SHALL COVER OPEN EXCAVATIONS IN PUBLIC STREETS WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS.
6. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION, AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.
7. EXISTING PAVEMENTS, CURBS, SIDEWALKS, CULVERTS AND DRIVEWAYS (ADJACENT TO THE WORK) DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO EQUAL OR BETTER THAN THEIR ORIGINAL CONDITION AT CONTRACTOR EXPENSE.
8. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK. CONTRACTOR SHALL TAKE NECESSARY ACTIONS TO PROTECT THE EXISTING SURFACES OUTSIDE THE WORK AREA FROM THE EQUIPMENT USED. ALL TRACKED MACHINERY (STREET PADS INCLUDED) SHALL NOT BE OPERATED DIRECTLY ATOP THE PAVEMENT WITHOUT APPROPRIATE PADDING AND PROTECTION OF THE SURFACES. ANY MARRED OR DISTRESSED AREAS SHALL BE REMOVED AND RESTORED WITH NEW MATERIALS TO THE SATISFACTION OF THE ENGINEER. ANY EXISTING DISTRESSED AREAS SHALL BE MADE KNOWN TO THE ENGINEER PRIOR TO OPERATIONS IN THE WORK AREA.
9. ALIGNMENT, CENTERLINE CURVE DATA AND STATIONING TO BE VERIFIED BY ON-THE-GROUND SURVEY FROM APPROVED SUBDIVISION PLAT (OR APPROVED PLOT FOR OFF SITE EASEMENTS), AND ELEVATIONS OF ALL CONNECTIONS TO EXISTING FACILITIES TO BE CONFIRMED PRIOR TO WORK START. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
10. CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCEMENT OF WORK.
11. CONTRACTOR SHALL ASSURE HIMSELF THAT ALL CONSTRUCTION PERMITS HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF WORK.
12. ALL UTILITY TRENCHES TO BE BACK FILLED TO 90 PERCENT (90%) STANDARD PROCTOR DENSITY UNLESS OTHERWISE NOTED.
13. ALL SURVEY, LAYOUT, MEASUREMENT, AND GRADE STAKE WORK SHALL BE PERFORMED BY BAKER & LAWSON, INC. AS PART OF THE WORK UNDER THIS CONTACT.
14. BAKER & LAWSON, INC. WILL PROVIDE EXPERIENCED INSTRUMENT MEN, COMPETENT ASSISTANTS, AND SUCH INSTRUMENTS, TOOLS, STAKES, AND OTHER MATERIALS REQUIRED TO COMPLETE THE SURVEY, LAYOUT AND MEASUREMENT WORK.
15. CONSTRUCTION DEBRIS AND OTHER UNCLASSIFIED UNSUITABLE EXCESS MATERIAL SHALL BE HAULED TO A STATE APPROVED DISPOSAL SITE OR AS DIRECTED BY THE ENGINEER. AN EXISTING LANDFILL APPROXIMATELY 10 MILES FROM THE PROJECT SITE IS THE NEAREST STATE APPROVED FEE FACILITY. ALL REFUSE MATERIALS (BROKEN CONCRETE, TREES, ASPHALT, ETC.) SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS EXPENSE.
16. PLAN QUANTITIES WILL BE USED FOR FINAL PAYMENT UNLESS DESIGN CHANGES ARE MADE DURING CONSTRUCTION.

CONSTRUCTION NOTES FOR PAVING & DRAINAGE

1. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM CONTROL DEVICES SHALL BE OBSERVED.
2. FILL SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS AND COMPACTED TO 95% OF OPTIMUM DENSITY AS DETERMINED USING TESTING METHOD ASTM D698.
3. CONTRACTOR RESPONSIBLE FOR MAINTAINING BARRICADES TO PREVENT TRAFFIC FROM USING NEW PAVEMENT UNTIL PROJECT IS COMPLETED AND ACCEPTED BY PROPER AUTHORITY OR AS AUTHORIZED BY ENGINEER.
4. B-B INDICATES ROAD WIDTH TO BACK OF CURB. CURB RADII ARE TO FACE OF CURB. T.C. INDICATES TOP OF CURB ELEVATIONS (BASED ON 4" CURB UNLESS OTHERWISE NOTED) T.P. INDICATES TOP OF PAVEMENT ELEVATION.
5. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT MAXIMUM SPACING OF 40-FOOT INTERVALS (SAWCUTS @ 20'(2 1/2"DEEP). LONGITUDINAL JOINTS SHALL BE AT MAXIMUM OF 14-FOOT SPACING. WOOD JOINT SHALL BE SOUND HEART REDWOOD.
6. 6-INCH CONCRETE PAVEMENT TO BE 5.5 SACK MIX MIN. (3,500 PSI) REINFORCING STEEL TO CONFORM TO ASTM A-615, GRADE 60. PROVIDE MINIMUM 18-INCH LAPS. (36 BAR DIA)
7. SAW CUT TO EXPOSE EXISTING LONGITUDINAL STEEL REQUIRED TO CREATE A MINIMUM TWELVE-INCH (12") OVERLAP OF PROPOSED AND EXISTING LONGITUDINAL REINFORCING STEEL WHEN MAKING A CONNECTION TO EXISTING CONCRETE PAVEMENT. WHERE SPACING OF EXISTING LONGITUDINAL STEEL DIFFERS FROM PROPOSED STEEL SPACING, NOTIFY THE ENGINEER.
8. USE PLASTIC CHAIRS TO SUPPORT REINFORCEMENT AT 24-INCH SPACING EACH WAY.
9. SUBGRADE TO BE STABILIZED 1-FOOT BACK OF PROPOSED CURB OR EDGE OF PAVEMENT. EXCESS LIME STABILIZED SOIL SHALL BE UTILIZED IN THE PREPARATION OF SUBGRADE FOR DRIVEWAYS. THERE WILL BE NO PAYMENT FOR PREPARING SUBGRADE FOR DRIVEWAYS AND SIDEWALKS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE ASSOCIATED CONCRETE PAY ITEMS. SUBGRADE PREPARATION FOR DRIVEWAYS AND PAVING SHALL INCLUDE PROOF ROLLING. SOFT AREAS TO BE EXCAVATED AND RECOMPACTED TO ADJACENT SOIL DENSITY.
10. USE CONTINUOUS LONGITUDINAL REINFORCING BAR IN CURB.
11. THE SUBGRADE SHALL BE BROUGHT TO THE REQUIRED GRADE BY THE USE OF GRADE STAKES (BLUE TOPS) AND APPROVED BY THE ENGINEER BEFORE LIME IS APPLIED.
12. RATE OF APPLICATION FOR LIME SHALL BE SEVEN PERCENT (7%) OF THE DRY WEIGHT OF SOIL (QUALITY BASE 100 LB/ C.F.) OR THIRTY ONE AND ONE HALF (31.5) POUNDS PER SQUARE YARD FOR SIX (6) INCH STABILIZED SUBGRADE. LIME STABILIZED SUBGRADE SHALL NOT BE MIXED MORE THAN ONE INCH IN EXCESS OF THE REQUIRED DEPTH. LIME STABILIZED SUBGRADE SHALL BE BROUGHT TO THE OPTIMUM MOISTURE CONTENT DURING THE FIRST MIXING OPERATIONS THEN LEFT TO CURE FOR TWO CURING DAYS BEFORE FINAL MIXING CAN BEGIN. AFTER FINAL MIXING IS COMPLETED AND BEFORE SOIL DENSITY TESTS ARE TAKEN. LIME STABILIZED SUBGRADE SHALL BE BROUGHT TO THE REQUIRED GRADE BY THE USE OF GRADE STAKES (BLUE TOPS) AND APPROVED BY THE ENGINEER. DENSITY SHALL BE NINETY-FIVE PERCENT (95%) OF THE STANDARD PROCTOR DENSITY AT OPTIMUM MOISTURE. TESTED AND COMPLETED SECTIONS SHALL BE KEPT MOIST CURED ON A DAILY BASIS WITH WATER TRUCKS OR SUBSTANTIAL SUPPLY HOSES FOR THE ENTIRE PERIOD THE SURFACE REMAINS UNCOVERED WITH ADDITIONAL COURSES. AFTER FINAL TESTING AND APPROVAL IS COMPLETE, TRACK EQUIPMENT, SCRAPERS AND OTHER HEAVY EQUIPMENT WILL NOT BE PERMITTED ON THE COMPLETED LIME STABILIZED AREA. LIGHT MOTOR GRADERS, RUBBER TIRED TRACTORS, WATER TRUCKS AND ROLLERS USED IN THE FINISHING OPERATIONS WILL BE PERMITTED WITH THE APPROVAL OF THE ENGINEER. CONCRETE AND LOADED HAUL TRUCKS ARE STRICTLY PROHIBITED ON COMPLETED AREAS UNLESS THE TRAVELED AREA REGARDLESS OF CONDITION IS REMIXED COMPACTED AND TESTED FOR APPROVAL A SECOND TIME.
13. FORMS SHALL BE EITHER WOOD OR STEEL, OF GOOD QUALITY, FREE OF WARP AND SUFFICIENTLY STAKED TO AVOID SHIFTING WHEN LOAD IS APPLIED. ALL REDWOOD EXPANSION BOARDS SHALL BE STAKED WITH 1X2 REDWOOD STAKES AND ALLOWED TO REMAIN WITHIN THE POUR. METAL STAKES ARE APPROVED FOR USE TO STAKE METAL KEYWAYS.
14. REINFORCING SHALL BE SECURELY TIED AT ALL INTERSECTIONS AND SPLICES. ALL DOWELS SHALL BE SECURELY TIED. REINFORCEMENT SHALL BE CLEAN AND FREE OF RUST AT TIME OF USE. PLASTIC CHAIR OF THE CORRECT HEIGHT SHALL BE USED. SPACING SHALL BE SUFFICIENT TO SUPPORT REINFORCEMENT.
15. PRIOR TO CONCRETE PLACEMENT, CONTRACTOR SHALL PRESENT A CERTIFIED COPY OF TOP OF FORM GRADES TO THE ENGINEER FOR REVIEW AND APPROVAL. ELEVATIONS OF FORMS SHALL BE RECORDED AT 10' INTERVALS. ADJUSTMENTS TO FORMS SHALL BE COMPLETE 4 HRS. PRIOR TO CONCRETE PLACEMENT.
16. CONCRETE FOR STREET PAVEMENTS SHALL BE "CLASS A" CONCRETE, SHALL NOT HAVE LESS THAN FIVE AND ONE HALF (5 1/2) SACKS OF CEMENT PER CUBIC YARD, AND SHALL NOT HAVE MORE THAN SIX AND ONE HALF (6 1/2) GALLONS OF WATER PER SACK OF CEMENT. SLUMP SHALL NOT EXCEED FIVE (5) INCHES AND SHALL DEVELOP A MODULUS OF RUPTURE STRENGTH OF THREE THOUSAND FIVE HUNDRED (3500) P.S.I. AT TWENTY EIGHT (28) DAYS. CONCRETE SHALL BE PLACED IN SUCH A MANNER AS TO REQUIRE AS LITTLE HANDLING POSSIBLE. USE OF AN APPROVED VIBRATING SCREED WILL BE REQUIRED. IN DIRECTIONS AND SMALL AREAS WHERE A VIBRATORY SCREED CAN NOT BE USED, A HAND VIBRATOR OR "JITTERBUG" SHALL BE USED. USE OF A TEN FOOT (10') CONCRETE PAVEMENT STRAIGHT EDGE WILL ALSO BE REQUIRED. ALL EXPOSED JOINTS SHALL BE EDGED AS NOTED ON DETAILS. SURFACE SHALL BE TYPICALLY A BELT FINISH OR BROOM FINISH (COARSE, MEDIUM OR LIGHT) AS REQUIRED BY THE APPLICATION AND DIRECTED BY THE ENGINEER.
17. FLY ASH SHALL MAKE UP FROM 20-25% BY VOLUME OF THE SPECIFIED CEMENT VOLUME AND SHALL CONFORM TO ASTM C 618, CLASS F.
18. CURING COMPOUND SHALL BE TYPE II WITH WHITE PIGMENT. APPLIED AT THE UNDILUTED RATE OF ONE GALLON PER TWO HUNDRED (200) SQUARE FEET.
19. EXPANSION JOINTS SHALL BE CLEANED, WIRE BRUSHED, BLOWN OR FLAME DRIED SEALED WITH AN APPROVED LIST RUBBERIZED HOT LAID ASPHALT JOINT AND CRACK SEALANT OR A TWO (2) COMPONENT POLYMERIC SELF LEVELING COLD APPLIED SEALANT.
20. CONTRACTOR WILL NOT PERMIT TRAFFIC ON NEW CONCRETE PAVEMENT UNTIL BOTH A MINIMUM OF SEVEN (7) CURING DAYS AND MODULUS OF RUPTURE STRENGTH OF THREE THOUSAND FIVE HUNDRED (3500) P.S.I. TAKES PLACE OR AS APPROVED BY THE ENGINEER/PUBLIC WORKS DEPARTMENT.
21. CONCRETE FOR CURB SHALL BE A 3000 P.S.I. PERFORMANCE STRENGTH CONCRETE WITH A MINIMUM FIVE (5) SACK CEMENT PER CUBIC YARD CONTENT. CURB CONCRETE MIX MAY BE A SMALL AGGREGATE BATCH DESIGN.
22. A CONCRETE MIX DESIGN OF CONCRETE PLUS FLY ASH MAY BE SUBSTITUTED IN LIEU OF THE STANDARD CONCRETE BATCH DESIGN. THE FLY ASH SHALL CONFORM TO THE REQUIREMENTS OF TXDOT MATERIAL SPECIFICATION D-9-8900, AND SHALL NOT EXCEED 25% BY ABSOLUTE VOLUME OF THE SPECIFIED CEMENT CONTENT. THE MODULUS OF RUPTURE STRENGTHS MINIMUMS AND DEVELOPMENT PERIOD OF THE STANDARD CONCRETE MIX DESIGN SHALL REMAIN IN EFFECT AND SHALL BE VERIFIED BY A CONCRETE BATCH MIX DESIGN PREPARED AND TESTED BY A GEOTECHNICAL LAB AND SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY ENGINEERING/PUBLIC WORKS DEPARTMENT PRIOR TO PAVING OPERATIONS.
23. ALL PAVEMENT SAW CUT REQUIRED IN THE PLANS SHALL BE CONSIDERED SUBSIDIARY TO THE PAVING REMOVAL PAY ITEM REQUIRING IT.
24. BLOCK SOD SHALL BE PLACED 16" (ONE BLOCK WIDTH) WIDE ALONG THE EDGE OF ALL NEWLY CONSTRUCTED CURBS AND TO DRIVEWAY REPLACEMENT LIMITS.
25. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANALYZING WEATHER CONDITIONS AND TO SUSPEND OPERATIONS DURING PERIODS WHEN ADVERSE WEATHER CONDITIONS APPEAR LIKELY. NO CONCRETE SHALL BE PLACED WHEN THE TEMPERATURE IS 35°F AND RISING. HOWEVER, NO CONCRETE SHALL BE PLACED WHEN THE CONCRETE TEMPERATURE IS ABOVE 100°F. THE CONTRACTOR SHALL KEEP SUFFICIENT LENGTH OF COVERING MATERIAL ON THE JOB SITE TO PLACE OVER AND PROTECT THE SURFACE OF "FRESH" CONCRETE DURING PERIODS OF UNPREDICTED RAINS.

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE COUNTY OF BRAZORIA COUNTY CONSTRUCTION MANUAL.
2. APPROVAL OF THESE CONSTRUCTION PLANS DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, ADEQUACY, AND COMPLIANCE OF THE SUBMITTED PLANS.
3. ALL RESPONSIBILITY FOR RESTS ON DESIGN ENGINEER WHO PREPARED THEM, IN APPROVING THESE PLANS, THE CITY MUST RELY ON THE ADEQUACY AND ACCURACY OF THE DESIGN ENGINEER.
4. DESIGNS SHALL BE IN COMPLETE COMPLIANCE WITH THE COUNTY OF BRAZORIA COUNTY. ANY WAIVER, DEVIATION, VARIANCE, OR EXCEPTION FROM ANY SPECIFIC REQUIREMENT(S) OF THE COUNTY OF BRAZORIA COUNTY CRITERIA MANUAL THAT WERE NOT EXPRESSLY REQUESTED WHEN PLANS ARE SUBMITTED, SHALL NOT BE CONSTRUED TO HAVE BEEN GRANTED IF PLANS ARE APPROVED. IT IS THE RESPONSIBILITY OF THE ENGINEER TO MAKE SUCH A WAIVER PROACTIVELY WHEN PLANS ARE SUBMITTED.
5. PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE WITH THE COUNTY, THE DEVELOPER'S CONSULTING ENGINEER, CONTRACTOR, AND ANY OTHER AFFECTED PARTIES. THE COUNTY SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE THE COUNTY A MINIMUM OF 48 HOURS' NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
7. IF BLASTING IS PLANNED, A BLASTING PERMIT MUST BE SECURED PRIOR TO COMMENCEMENT OF ANY BLASTING.
8. ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE BEFORE ACCEPTANCE.
9. THE LOCATION OF ANY WATER OR WASTEWATER LINES SHOWN ON THE PLANS MUST BE VERIFIED BY THE PUBLIC WORKS DEPARTMENT.
10. USE ONE CALL UTILITY SYSTEM: DIAL 1-800-344-8377, 48 HOURS BEFORE YOU DIG.
11. ALL STORM SEWER PIPES TO BE CLASS III RCP UNLESS NOTED OTHERWISE. SPECIAL NOTES FOR PLANS, WHEN APPLICABLE.
12. CALL THE COUNTY 48 HOURS PRIOR TO BEGINNING ANY WORK AND SCHEDULE A PRECONSTRUCTION MEETING WITH THE COUNTY AND ALL AFFECTED UTILITY PROVIDERS, THE GENERAL CONTRACTOR, THE DEVELOPER AND THE DEVELOPER'S ENGINEER.

WATER CONSTRUCTION NOTES

1. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING TO WITHSTAND TEST PRESSURE AS SPECIFIED IN CONTRACT DOCUMENTS. THRUST BLOCKING SHALL BE CLASS "B" CONCRETE 2500 P.S.I. AND SHALL BE SUBSIDIARY TO THE BID ITEM PERTINENT TO ITS USE. ALL CEMENT STABILIZED SAND BACKFILL SHALL BE 1.5 SK/CY CEMENT CONTENT. ALL M.J. D.J. FITTINGS WILL HAVE M.J. RESTRAINTS (STARGRIP OR EQUAL) WRAP FITTINGS & RESTRAINTS WITH 10 MIL POLY.
2. SEPARATION DISTANCES OF ALL WATER MAIN AND SANITARY SEWER MAIN CONSTRUCTION SHALL BE GOVERNED BY THE "TEXAS NATURAL RESOURCE CONSERVATION COMMISSION RULES AND REGULATIONS FOR DESIGN CRITERIA FOR SEWAGE SYSTEMS," SECTION 317.20, LATEST PRINTING.
3. ALL 4" THROUGH 12" WATER MAINS TO BE P.V.C. PIPE, AWWA C-900, CLASS 150, SDR 18, MEETING THE REQUIREMENTS OF ANSI/NSF 61 UNLESS OTHERWISE NOTED.
4. WATER LINES UNDER OR WITHIN 1 FEET OF NEW OR EXISTING PAVEMENTS (STREETS AND DRIVEWAYS) SHALL BE BACK FILLED WITH CEMENT STABILIZED SAND AS SPECIFIED IN THE CONSTRUCTION DETAIL.
5. PROVIDE A MINIMUM SIX-INCHES (6") OF CLEARANCE AT STORM SEWER AND WATER LINE CROSSINGS.
6. 4-INCH THROUGH 12-INCH LINES TO HAVE A MINIMUM OF 4'-0" COVER BELOW TOP OF CURB. UNLESS OTHERWISE NOTED, VARY FLOW LINE UNIFORMLY FROM DEPTH SHOWN ON PLANS.
7. CENTERLINE OF FIRE HYDRANT TO BE LOCATED AT 3' FROM BACK OF CURB WITH CENTERLINE OF STEAMER NOZZLE 22 INCHES ABOVE FINISHED GRADE. TURN STEAMER OUTLET TO FACE STREET.
8. WHERE WATER LINE CROSSES SANITARY SEWER LINE OR LEAD WITH LESS THAN NINE FEET (9') VERTICAL SEPARATION, PROVIDE ONE MINIMUM 18-FOOT JOINT OF WATER LINE CENTERED ON LEAD. INCLUDE COST OF LEAD CROSSING IN UNIT PRICE BID PER LINEAR FOOT FOR WATER LINE IN APPROPRIATE SIZES.
9. THE CONTRACTOR AT ALL TIMES PROVIDE MAXIMUM UNINTERRUPTED FLOW TO ALL SERVICES AND MAINS AND SHALL AVAIL OF ANY ROUTING METHOD AND EQUIPMENT TO ACCOMPLISH THIS.

CENTERPOINT ENERGY / ENTEX NOTES

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES
INTRASTATE PIPELINE, LLC. WHERE APPLICABLE)
ONLY. SERVICE LINES ARE NOT USUALLY SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (979) 849-4364 OR 811 A MINIMUM
OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

* WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (800) 752-8036 OR (713) 659-2111 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
* WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
* WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
* FOR EMERGENCIES REGARDING GAS LINES CALL (800) 659-2111 OR (713) 659-2111.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY
NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT OF WAY DIVISION AT (713) 207-5769.

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752. HEALTH & SAFETY CODE, FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

SBC NOTES

THE LOCATIONS OF SOUTHWESTERN BELL TELEPHONE CO. UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

TEXAS NEW MEXICO POWER NOTES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. WE HAVE NOT ATTMPETD TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH AND SAFETY CODE FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL TEXAS NEW MEXICO POWER AT (979) 829-5776.

BRAZORIA COUNTY DRAINAGE DISTRICT #5 NOTES

The following notes will appear on the Final Plat drawing(s). If Final Plat drawing(s) is not issued the Construction drawing(s) will carry notes as shown:

1. Slab elevations (finished floor) shall be a minimum of 2 feet above finished grade.

2. All drainage easements shown hereon shall be kept clear of fences, buildings, plantings and other obstructions to the operation and maintenance of drainage facilities.

3. All property shall drain into the drainage easement only through an approved drainage structure.

4. All drainage easements and detention pond reserves shown on this plat, with the exception of _____, will be maintained by the property owners and/or business owners; provided, however, and governmental entity have jurisdiction, including, without limitation, Brazoria County, Texas and Brazoria County Drainage District # 5, shall have the right, but not the obligation to enter upon the drainage easements to perform maintenance operations at any time after the date hereof.

5. The property identified in the foregoing plat lies with Brazoria County Drainage District #5.

6. This rural commercial site employs a natural drainage system, which is intended to provide drainage for the site that is similar to that which existed under pre-development conditions. Thus, during large storm events, ponding of water should be expected to occur on the site to the extent it may have prior to development, but such ponding should not remain for an extended period of time.

7. Land use within the commercial site is limited to an average imperviousness of no more than _____percent. The drainage and /or detention system has been designed with the assumption that this average percent, imperviousness will not be exceeded. If this percentage is to be exceeded, a replat and/or redesign of the system may be necessary.

8. Other than shown heron, there are no pipeline easements or pipelines within the boundaries of this plat.

9. All storm water drainage pipes, culverts, tiles or other (including driveway culverts) will be minimum 24"I.D. or equal.

10. Dedicated drainage easement(s) granted to Brazoria County Drainage District # 5 for drainage maintenance purposes shall include 45 feet top of bank, plus the sum (footage) of both ditch side slopes and channel bottom and 45 feet of bank on the opposite bank.

11. Dedicated Ingrees/egress accesses are granted to Brazoria County Drainage District # 5 (see District Resolution No 2007-06 & No 2007-07). Access will be gated and locked with Brazoria County Drainage District # 5's lock.

12. Prohibited use of 'metal' pipe in storm water/sewer applications (see District Resolution No 2007-08).

13. Prohibited use of 'rip-rap' in storm water/sewer applications (District policy).

14. Pipelines, utility lines and other crossing under any Brazoria County Drainage District #5 ditch require approval and permitting prior to construction.

15. All dedicated storm water drainage and/or access easements to be granted to Brazoria County Drainage District # 5 by the property owner will be initiated and recorded, at property owner's expense, in Brazoria County, Texas with a Recorded Document Number affixed to said easement prior to final project approval granted by Brazoria County Drainage District # 5 Board of Commissioners.

16. It will be the property owner's responsibility to verify# any Brazoria County Drainage District #5 'Dedicated' drainage easements are on or cross their property. If so, the property owner will comply as stated within the recorded easement.

17. Project field start-up will start within 365 calendar days from date shown here. Continuous and reasonable field site work is expected. See Brazoria County drainage criteria manual section 1, Introduction; Sub -Section 1.5. Plat and Plan approval process, and drainage acceptance procedures; time limit for approval and Brazoria County Drainage District # 5 Resolution 2011-1, allowable time(s) and procedures for starting-up approved projects.

NOTICE: All approvals of the DISTRICT shall be valid for a period not to exceed three hundred sixty-five (365) calendar days beginning after the date of approval. Failure to commence construction of an approved project or to make full use of approvals granted within that time period shall make such approvals null and void. All fees shall be forfeited and will not be returned to the applicant.

NOTICE: All concrete pours on detention systems and District facilities require a minimum of forty-eight (48) hours (two working days) written notice to the District and an inspection appointment before the pour begins. Insure Contractor compliance by placing a note on the plans.

NOTICE: Failure to properly coordinate an on-site inspection before concrete is poured will cause portions of the concrete to be broken out at the applicant's expense in order to prove to the District's inspector that construction complies with District Rules, Regulations & Guidelines.

NOTICE: At the conclusion of construction, the District shall conduct a formal inspection and notify the Engineer in writing of any deficiencies. The Engineer shall notify the District when all deficiencies have been corrected and a subsequent inspection will be conducted.

NOTICE: After construction of this project is approved by the District, constructed by the Owner, the Engineer shall send a certification of completion and a set of as-built plans to the District office.

NOTICE: No drainage system or detention facility shall be placed in service until a certificate is issued.

NOTICE: Buildings, fences, structures, and other permanent improvements shall not be erected in drainage easements, fee strips, or other access points.

NOTICE: Aerial overhang of a drainage fee strip or easement shall be prohibited unless specifically approved in writing by the District.

NOTE:
REFER TO THE ALPINE SERVICES - DETENTION POND GEOTECHNICAL ENGINEERING REPORT PREPARED BY TERRACON, AND DATED MARCH 27, 2023 FOR GROUND WATER CONDITIONS, SUITABILITY OF FILL MATERIAL, COMPACTION RECOMMENDATIONS, POND SIDE SLOPE STABILITY AND CLAY LINER REQUIREMENTS.

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-4681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS
RANDALL J. LISKA
89374
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374
Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: N.T.S.
PROFILE:
HORIZONTAL:
VERTICAL:

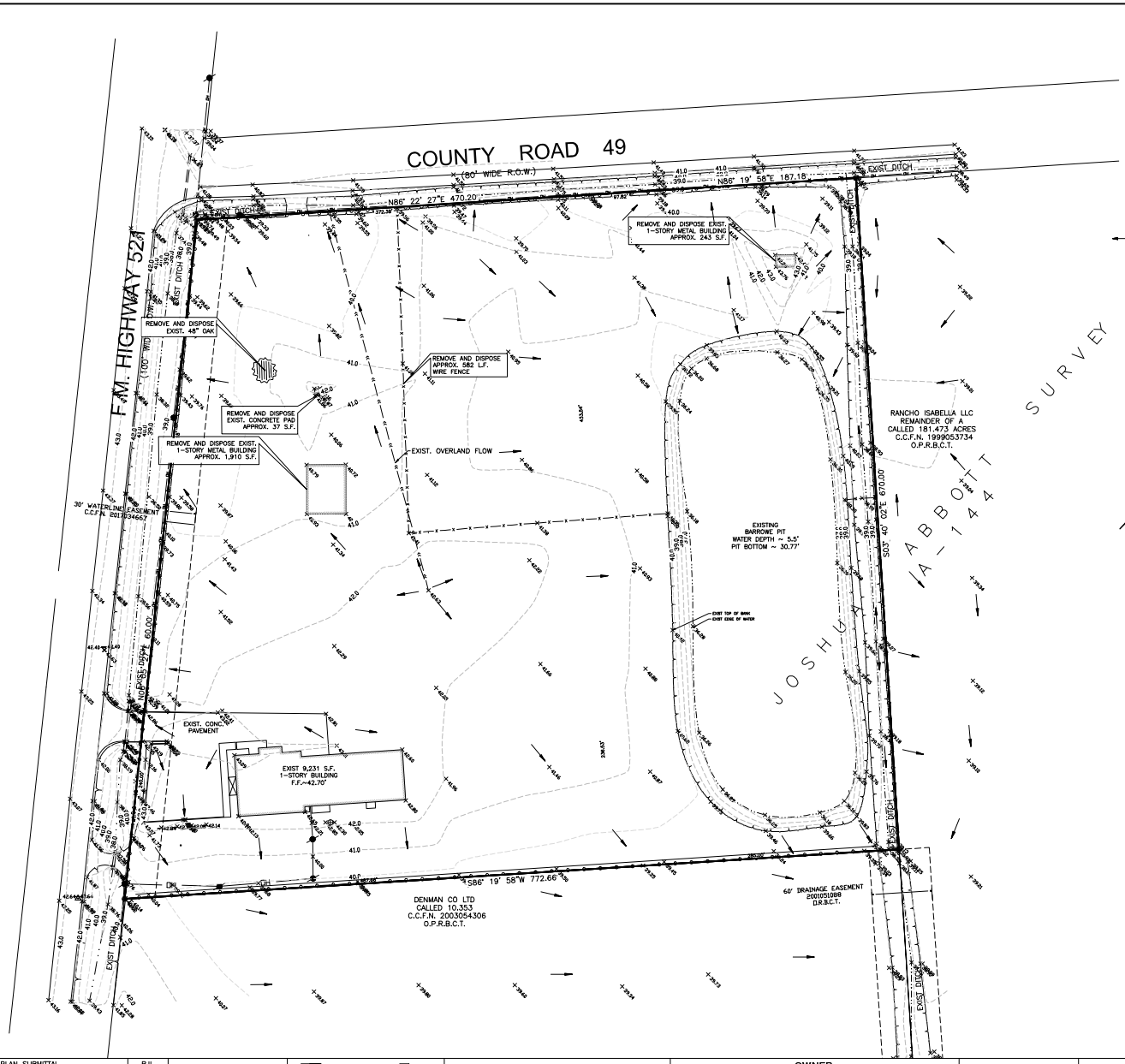
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

CONSTRUCTION NOTES

PROJECT NO. 15313

C.1

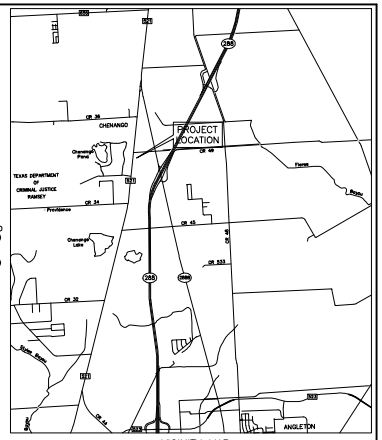
15313 SHEET SE.dwg



SCALE : 1" = 50'

LEGEND

- = FOUND 5/8-INCH IRON ROD (UNLESS OTHERWISE NOTED)
- = SET 5/8-INCH IRON ROD (UNLESS OTHERWISE NOTED)
- = EXIST SHEET FLOW PATH



VICINITY MAP
NTS

The following notes will appear on the Final Plat drawing(s). If Final Plat drawing(s) is not issued the Construction drawing(s) will carry notes as shown:

1. Slab elevations (finished floor) shall be a minimum of 2 feet above finished grade.

2. All drainage easements shown hereon shall be kept clear of fences, buildings, plantings and other obstructions to the operation and maintenance of drainage facilities.

3. All property shall drain into the drainage easement only through an approved drainage structure.

4. All drainage easements and detention pond reserves shown on this plat, with the exception of _____ will be maintained by the property owners and/or business owners; provided, however, and governmental entity have jurisdiction, including, without limitation, Brazoria County, Texas and Brazoria County Drainage District # 5, shall have the right, but not the obligation to enter upon the drainage easements to perform maintenance operations at any time after the date hereof.

5. The property identified in the foregoing plat lies with Brazoria County Drainage District #5.

6. This rural commercial site employs a natural drainage system, which is intended to provide drainage for the site that is similar to that which existed under pre-development conditions. Thus, during large storm events, ponding of water should be expected to occur on the site to the extent it may have prior to development, but such ponding should not remain for an extended period of time.

7. Land use within the commercial site is limited to an average imperviousness of no more than _____ percent. The drainage and /or detention system has been designed with the assumption that this average percent, imperviousness will not be exceeded. If this percentage is to be exceeded, a replat and/or redesign of the system may be necessary.

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16. It will be the property owner's responsibility to verifyit any Brazoria County Drainage District #5 'Dedicated' drainage easements are on or cross their property. If so, the property owner will comply as stated within the recorded easement.

17. Project field start-up will start within 365 calendar days from date shown here. Continuous and reasonable field site work is expected. See Brazoria County drainage criteria manual section 1, Introduction; Sub -Section 1.5. Plat and Plan approval process, and drainage acceptance procedures; time limit for approval and Brazoria County Drainage District # 5 Resolution 2011-1, allowable time(s) and procedures for starting-up approved projects.

NOTES:

THE DRAINAGE OF ADJACENT SITE(S) WILL NOT BE ADVERSELY AFFECTED BY THE PROPOSED DEVELOPMENT IN A 100-YEAR EVENT.

ALL BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM 1983 (NAD83) SOUTH CENTRAL ZONE, PER GPS OBSERVATIONS.

FLOOD ZONE STATEMENT
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP No. 48039C0275K, REVISED DATE DECEMBER 30, 2020, THE SURVEYED SITE LIES WITHIN ZONE "X" (UNSHADED).

TEMPORARY BENCHMARK: A PK NAIL IN THE ASPHALT ON THE EAST SIDE OF FM 521 APPROXIMATELY 250 FEET NORTH OF THE SOUTHWEST CORNER OF THE SITE. ELEVATION = 42.67 FEET, (NAVD88)

REFERENCE BENCHMARK:
NGS PID DR8248 (TXAG REFERENCE MONUMENT 1) STAINLESS STEEL ROD IN SLEEVE, WITH STAMPING: TXAG-RM1 2022 LOCATED ATTHE TEXAS DEPARTMENT OF TRANSPORTATION AREA OFFICE, 18671 FM 523, ANGLETON, TX.
ELEVATION = 32.0' NAVD88.

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL/BB
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-4681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS
RANDALL J. LISKA
89374
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374

Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: 1" = 50'
PROFILE:
HORIZONTAL:
VERTICAL:

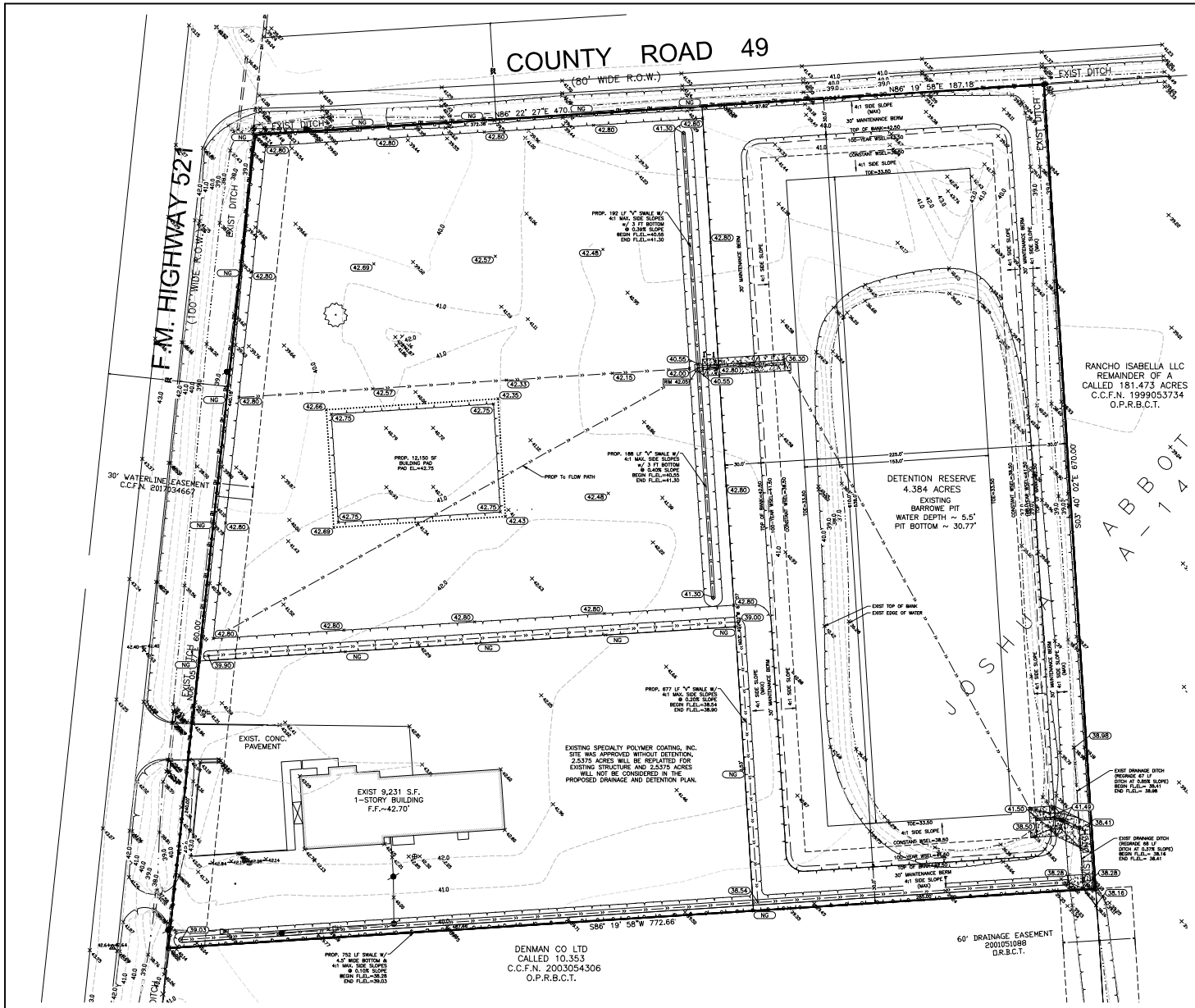
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

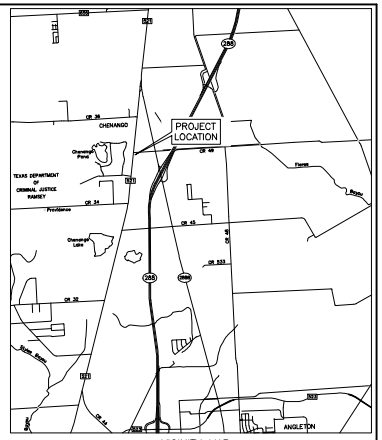
EXISTING CONDITIONS

PROJECT NO. 15313

C.2

15313 SHEET SE.dwg





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NTS

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NOTES:

THE DRAINAGE OF ADJACENT SITE(S) WILL NOT BE ADVERSELY AFFECTED BY THE PROPOSED DEVELOPMENT IN A 100-YEAR EVENT.

ALL BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM 1983 (NAD83) SOUTH CENTRAL ZONE, PER GPS OBSERVATIONS.

FLOOD ZONE STATEMENT
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP No. 48039C0275K, REVISED DATE DECEMBER 30, 2020, THE SURVEYED SITE LIES WITHIN ZONE "X" (UNSHADED).

TEMPORARY BENCHMARK: A PK NAIL IN THE ASPHALT ON THE EAST SIDE OF FM 521 APPROXIMATELY 250 FEET NORTH OF THE SOUTHWEST CORNER OF THE SITE.
ELEVATION = 42.67 FEET, (NAVD88)

REFERENCE BENCHMARK:
NGS PID DR8248 (TXAG REFERENCE MONUMENT 1) STAINLESS STEEL ROD IN SLEEVE, WITH STAMPING: TXAG-RM1 2022 LOCATED ATTHE TEXAS DEPARTMENT OF TRANSPORTATION AREA OFFICE, 18671 FM 523, ANGLETON, TX.
ELEVATION = 32.0' NAVD88.

NOTES:

FINISHED FLOOR HEIGHTS FOR ALL PROPOSED BUILDING SHALL BE SET A MINIMUM OF 2 FEET ABOVE NATUALL GROUND.
MINIMUM BUILDING FINISHED FLOOR ELEVATION = 43.25

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-4681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS
RANDALL J. LISKA
89374
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374
Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: 1" = 40'
PROFILE:
HORIZONTAL:
VERTICAL:

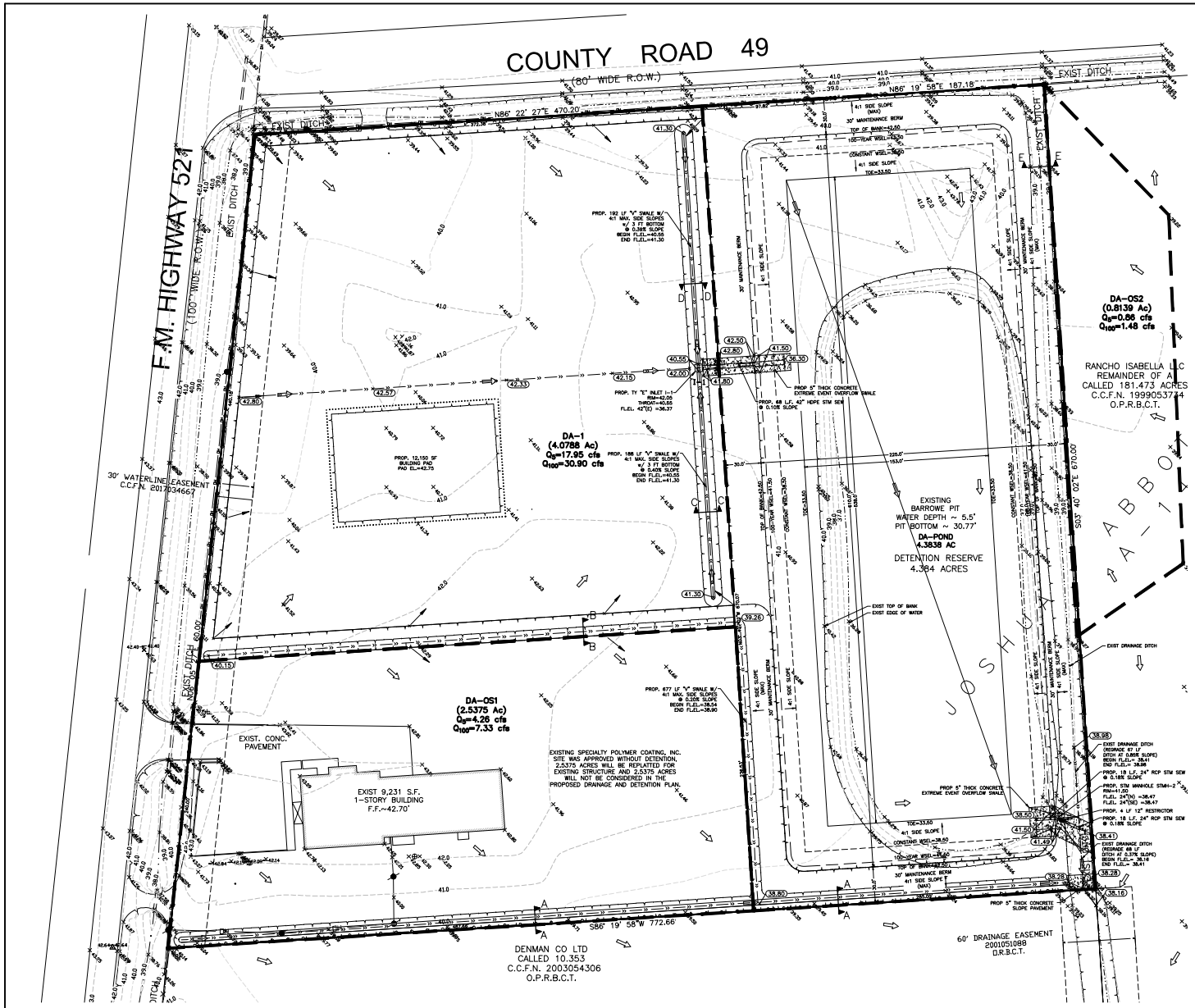
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

GRADING PLAN

PROJECT NO. 15313

C.3

15313 SHEET SE.dwg



SCALE : 1" = 40'

NOTICE: ALL APPROVALS OF THE DISTRICT SHALL BE VALID FOR A PERIOD NOT TO EXCEED THREE HUNDRED SIXTY-FIVE (365) CALENDAR DAYS BEGINNING AFTER THE DATE OF APPROVAL. FAILURE TO COMMENCE CONSTRUCTION OF AN APPROVED PROJECT OR TO MAKE FULL USE OF APPROVALS GRANTED WITHIN THAT TIME PERIOD SHALL MAKE SUCH APPROVALS NULL AND VOID. ALL FEES SHALL BE FORFEITED AND WILL NOT BNE RETURNED TO THE APPLICANT.

NOTICE. ALL CONCRETE POURS ON DETENTION SYSTEMS AND DISTRICT FACILITIES REQUIRE A MINIMUM OF FORTY-EIGHT (48) HOURS (TWO WORKING DAYS) WRITTEN NOTICE TO THE DISTRICT AND AN INSPECTION APPOINTMENT BEFORE THE POUR BEGINS. INSURE CONTRACTOR COMPLIANCE BY PLACING A NOTE ON THE PLANS.

NOTICE: FAILURE TO PROPERLY COORDINATE AN ON-SITE INSPECTION BEFORE CONCRETE IS POUTED WILL CAUSE PORTIONS OF THE CONCRETE TO BE BROKEN OUT AT THE APPLICANT'S EXPENSE IN ORDER TO PROVE TO THE DISTRICT'S INSPECTOR THAT CONSTRUCTION COMPLIES WITH DISTRICT'S RULES, REGULATIONS & GUIDELINES.

NOTICE: AT THE CONCLUSION OF CONSTRUCTION, THE DISTRICT SHALL CONDUCT A FORMAL INSPECTION AND NOTIFY THE ENGINEER IN WRITING OF ANY DEFICIENCIES. THE ENGINEER SHALL NOTIFY THE DISTRICT WHEN ALL DEFICIENCIES HAVE BEEN CORRECTED AND THE SUBSEQUENT INSPECTION WILL BE CONDUCTED.

NOTICE: AFTER CONSTRUCTION OF THIS PROJECT IS APPROVED BY THE DISTRICT, CONSTRUCTED BY THE OWNER, THE ENGINEER SHALL SEND A CERTIFICATION OF COMPLIANCE AND A SET OF AS-BUILT PLANS TO THE DISTRICT OFFICE.

NOTICE: NO DRAINAGE SYSTEM OR DETENTION FACILITY SHALL BE PLACED IN SERVICE UNTIL CERTIFICATE IS ISSUED.

NOTICE: BUILDINGS, FENCES, STRUCTURES, AND OTHER PERMANENT IMPROVEMENTS SHALL NOT BE ERECTED IN DRAINAGE EASEMENTS, FEE STRIPS, OR OTHER ACCESS POINTS.

NOTICE: AERIAL OVERHANG OF A DRAINAGE FEE STRIP OR EASEMENT SHALL BE PROHIBITED UNLESS SPECIFICALLY APPROVED IN WRITING BY THE DISTRICT.

NOTE:

ALL FUTURE DEVELOPMENT ON THIS SITE MUST BE APPROVED BY BRAZORIA COUNTY DRAINAGE DISTRICT #5.

NOTES:

ALL FUTURE DEVELOPMENT ON THIS SITE MUST BE APPROVED BY BRAZORIA COUNTY DRAINAGE DISTRICT #5.

REINFORCED CONCRETE PIPE USED IN AN OUTLET STRUCTURE SHOULD CONFORM TO ASTM C-76 CLASS III WITH COMPRESSION TYPE RUBBER GASKET JOINTS CONFORMING TO ASTM C-443. HDPE MAY ALSO BE USED.

THE DRAINAGE OF ADJACENT SITE(S) WILL NOT BE ADVERSELY AFFECTED BY THE PROPOSED DEVELOPMENT IN A 100-YEAR EVENT.

ALL BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM 1983 (NAD83) SOUTH CENTRAL ZONE, PER GPS OBSERVATIONS.

FLOOD ZONE STATEMENT
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP No. 48039C0275K, REVISED DATE DECEMBER 30, 2020, THE SURVEYED SITE LIES WITHIN ZONE "X" (UNSHADED).

TEMPORARY BENCHMARK: A PK NAIL IN THE ASPHALT ON THE EAST SIDE OF FM 521 APPROXIMATELY 250 FEET NORTH OF THE SOUTHWEST CORNER OF THE SITE.
ELEVATION = 42.67 FEET, (NAVD88)

REFERENCE BENCHMARK:
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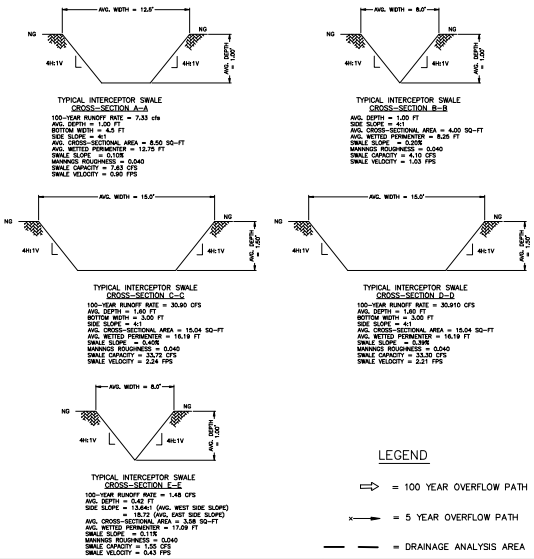
ELEVATION = 32.0' NAVD88.



LEGEND

⇨ = 100 YEAR OVERFLOW PATH

x——→ = 5 YEAR OVERFLOW PATH

— — = DRAINAGE ANALYSIS AREA

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
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Telephone: (832) 886-1053

PLAN: 1" = 40'
PROFILE:
HORIZONTAL:
VERTICAL:

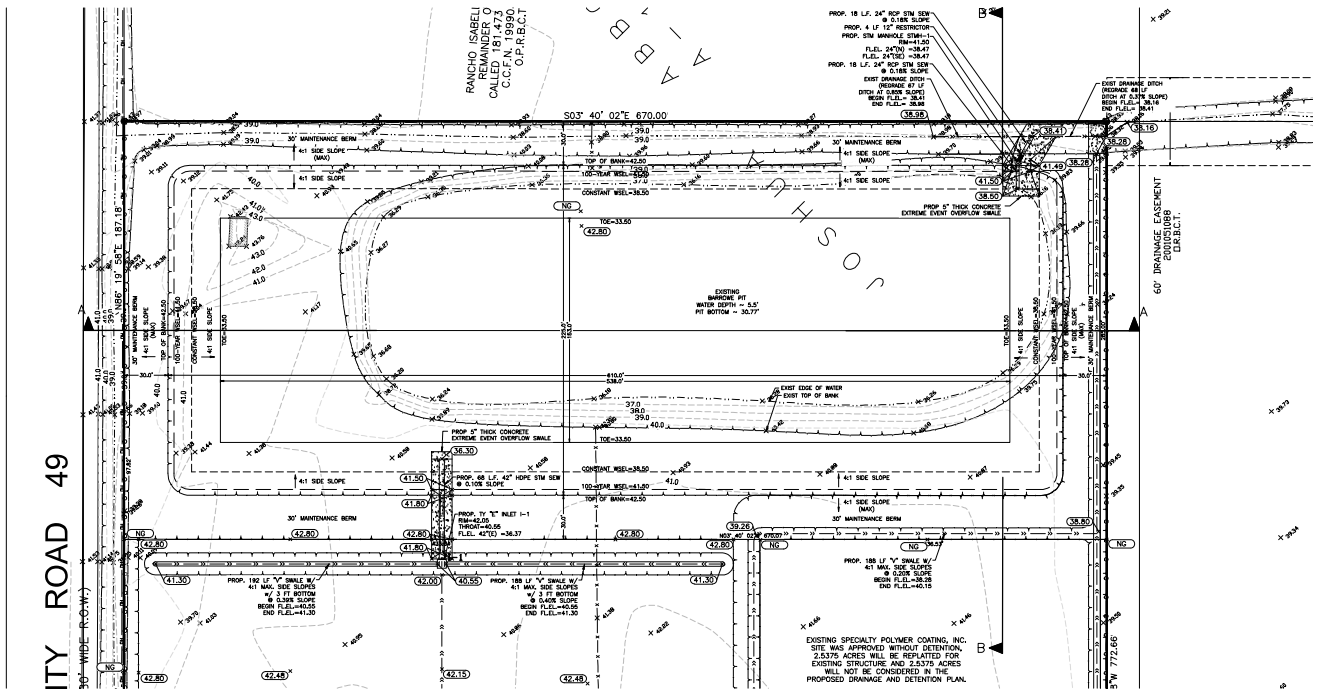
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

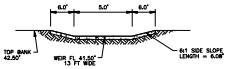
DRAINAGE AREA MAP

PROJECT NO. 15313

C.4

15313 SHEET SET.dwg



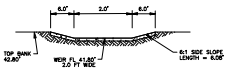


15313 - I&D LEGECY COMMERCIAL PARK
100-YEAR EXTREME EVENT OVERFLOW SWALE (TO OUTFALL DITCH)

Q = 1.49 / n * A * R^2/3 * S^1/2

COEFFICIENT OF ROUGHNESS (n) =	0.015 SMOOTH CONCRETE PAVEMENT
DEPTH (d) =	1.00 ft
BOTTOM WIDTH (b) =	13.00 ft
SIDE SLOPE =	6 : 1
AREA (A) =	19.00 sq-ft
WETTED PERIMETER (P) =	25.17 ft
HYDRAULIC RADIUS (R) =	0.755 ft
SLOPE (S) =	0.0017 ft/ft
CAPACITY (Q) =	64.52 cfs
REQUIRED CAPACITY =	62.93 cfs

100-YEAR EXTREME EVENT
OVERFLOW SWALE
(TO OUTFALL DITCH)
N.T.S.

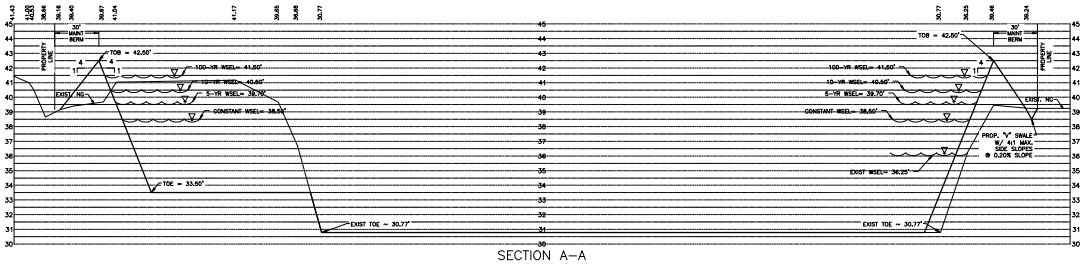


15313 - I&D LEGECY COMMERCIAL PARK
100-YEAR EXTREME EVENT OVERFLOW SWALE (TO DETENTION POND)

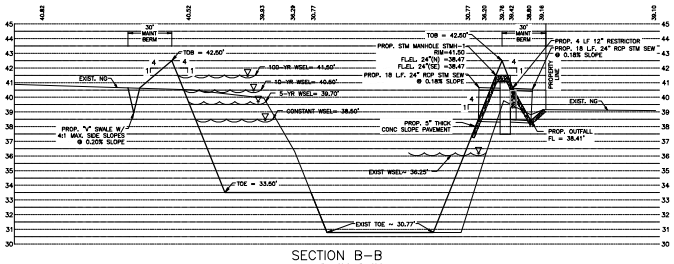
Q = 1.49 / n * A * R^2/3 * S^1/2

COEFFICIENT OF ROUGHNESS (n) =	0.015 SMOOTH CONCRETE PAVEMENT
DEPTH (d) =	1.00 ft
BOTTOM WIDTH (b) =	2.00 ft
SIDE SLOPE =	6 : 1
AREA (A) =	8.00 sq-ft
WETTED PERIMETER (P) =	14.17 ft
HYDRAULIC RADIUS (R) =	0.565 ft
SLOPE (S) =	0.0069 ft/ft
CAPACITY (Q) =	45.10 cfs
REQUIRED CAPACITY =	30.90 cfs

100-YEAR EXTREME EVENT
OVERFLOW SWALE
(TO DETENTION POND)
N.T.S.



SECTION A–A
SCALE: 1"=40'(H) 1"=4'(V)



SECTION B–B
SCALE: 1"=40'(H) 1"=4'(V)

NOTES:

THE DRAINAGE OF ADJACENT SITE(S) WILL NOT BE ADVERSELY AFFECTED BY THE PROPOSED DEVELOPMENT IN A 100-YEAR EVENT.

ALL BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM 1983 (NAD83) SOUTH CENTRAL ZONE, PER GPS OBSERVATIONS.

FLOOD ZONE STATEMENT
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP No. 48039C0275K, REVISED DATE DECEMBER 30, 2020, THE SURVEYED SITE LIES WITHIN ZONE "X" (UNSHADED).

TEMPORARY BENCHMARK: A PK NAIL IN THE ASPHALT ON THE EAST SIDE OF FM 521 APPROXIMATELY 250 FEET NORTH OF THE SOUTHWEST CORNER OF THE SITE. ELEVATION = 42.67 FEET, (NAVD88)

REFERENCE BENCHMARK:
NGS PID DR8248 (TXAG REFERENCE MONUMENT 1) STAINLESS STEEL ROD IN SLEEVE, WITH STAMPING: TXAG-RM1 2022 LOCATED AITHE TEXAS DEPARTMENT OF TRANSPORTATION AREA OFFICE, 18671 FM 523, ANGLETON, TX.
ELEVATION = 32.0' NAVD88.

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL/BB
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-6681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS
RANDALL J. LISKA
89374
REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374
Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: 1" = 50'
PROFILE:
HORIZONTAL:
VERTICAL:

I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

POND LAYOUT AND CROSS SECTIONS

PROJECT NO. 15313

C.5

15313 SHEET SET.dwg

1

Drainage Analysis

Job # 15313 - I&D LEGACY COMMERCIAL PARK, ANGLETON, TX

Rainfall intensity calculations for Brazoria County

I = intensity (in/hr)
b = coefficient
t = time of concentration
d = coefficient
e = coefficient

subscript
i = 1 = 2year storm
i = 2 = 5 year storm
i = 3 = 10 year strom
i = 4 = 25 year storm
i = 5 = 50 year storm
i = 6 = 100 year storm

$i := 1..6$

$b_i :=$

57.440
58.019
57.515
52.780
49.157
46.316

$e_i :=$

0.754
0.712
0.678
0.618
0.574
0.537

$d_i :=$

11.511
9.236
7.777
5.022
3.081
1.555

$T_{i0} := 33.38$ ENTER PREDEVELOPMENT TIME OF CONCENTRATION

$I_i := \frac{b_i}{(d_i + T_{i0})^{e_i}}$ $I_6 = 6.969 \ \frac{in}{hr}$ Predevelopment Intensity of interest

$C_{av} := 0.30$ ENTER PREDEVELOPMENT C VALUE

$A_{ac} := 8.4625$ ENTER AREA (acres)

2

$C_f := 1.25$

$Q := C \cdot C_f \cdot I_6 \cdot A$ Must Insert correct subscript for I to obtain the relevant Q

$Q = 22.116$ cfs

$P := 16 \cdot in$ Enter Atlas 14 Rainfall Depth: Region 2

$V_{ac} := (C) \cdot A \cdot 43560 \cdot \frac{P}{12}$ For Rough calculations, total volume storage is assumed to equal (C)*A with A converted to square feet multiplied by rainfall depth (P)

$V = 1.511 \times 10^5$

DEVELOPMENT OF RUNOFF HYDROGRAPH MALCOM'S METHOD AS DESCRIBED IN THE BRAZORIA COUNTY DRAINAGE CRITERIA MANUAL

$T := \frac{V}{1.39 \cdot Q}$ $T = 4.91 \cdot t \times 10^3$ T = Time to peak, presented as a function of volume and peak flow and therefore indirectly related to time of concentration

$t := 0, 1000 .. 84000$

$f(t) := \left(\frac{Q}{2}\right)\left(1 - \cos\left(\frac{t \cdot \pi}{T}\right)\right)$ f(t) describes rising limb of hydrograph

$g(t) := 4.34 \cdot Q \cdot \exp\left[-1.30 \cdot \left(\frac{t}{T}\right)\right]$ g(t) describes descending limb of hydrograph

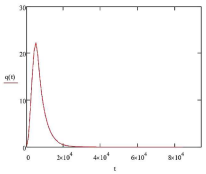
$q(t) := if(t \le 1.25 \cdot T, f(t), g(t))$

3

$Volume_{pre} := \int_0^{86400} q(t)\,dt$

$Volume_{pre} = 1.517 \times 10^5$

Predevelopment hydrograph



$T_{i0} := 29.37$ min ENTER POST DEVLOPMENT TIME OF CONCENTRATION

$I_i := \frac{b_i}{(d_i + T_{i0})^{e_i}}$ $I_6 = 7.437 \ \frac{in}{hr}$ Post development I of interest

$C_{av} := 1.0$ ENTER POST DEVLOPMENT C FACTOR REVISE CI AND AREA IF NECESSARY

$C_{av} := 1.0$ Note. Product of C x Cf ≤ 1.00 (maximum)

$Q := C \cdot I_6 \cdot A \cdot C_f$

$Q = 62.935$ cfs

$V_{ac} := (C) \cdot A \cdot 43560 \cdot \frac{P}{12}$

$V = 5.038 \times 10^5$ cf

4

$T := \frac{V}{1.39 \cdot Q}$ $T = 5.759 \times 10^3$

$t := 0, 1000 .. 25000$

$f(t) := \left(\frac{Q}{2}\right)\left(1 - \cos\left(\frac{t \cdot \pi}{T}\right)\right)$

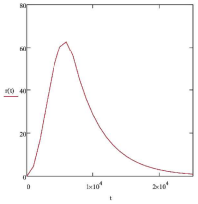
$g(t) := 4.34 \cdot Q \cdot \exp\left[-1.30 \cdot \left(\frac{t}{T}\right)\right]$

$r(t) := if(t \le 1.25 \cdot T, f(t), g(t))$

$Volume_{post} := \int_0^{86400} r(t)\,dt$

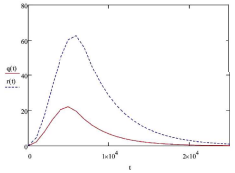
$Volume_{post} = 5.056 \times 10^5$

Post development hydrograph



5

Combined pre and post development hydrographs



$f(t) := ((r(t) - q(t)) \cdot 1$

$v(t) := if(f(t) > 0, f(t), 0)$

THE REQUIRED STORAGE COMPUTED AS THAT PART OF THE POST DEVELOPMENT HYDROGRAPH THAT FALLS ABOVE THE PREDEVELOPMENT HYDROGRAPH

ACRE -FEET

$\frac{\int_0^{86400} v(t)\,dt}{43560} = 8.124$ $ac - ft$

6

Hydrological and Hydraulic Impacts
Project Name - City, Texas
Job # 15313

Brazoria County, Texas

A = 8.4632 Acre Development :

Pre Development:

C = 0.30
TC = 33.38 Minutes, I = 6.969 in/hr
Q = 100 Year Storm = 22.116 cfs

Post Development

C = 1.0
TC = 29.37 Minutes, I= 7.437 in/hr
Q = 100 Year Storm = 62.935 cfs

Required Detention:

8.124 acre - feet(353,881 c.f.)

Randall J. Liska, P.E. May 25, 2023

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
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PHONE: (979) 849-4681 FAX: (979) 849-4689
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STATE OF TEXAS RANDALL J. LISKA 89374 REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374

Date: July 24, 2023

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Telephone: (832) 886-1053

PLAN: N.T.S.
PROFILE:
HORIZONTAL:
VERTICAL:

I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

HYDROLOGIC CALCULATIONS

PROJECT NO. 15313

C.6

15313 SHEET SE.dwg

PROJECT: I&D Legacy Commercial Park
JOB NO: 15313

STORM SEWER CALCULATIONS (5-YEAR FREQUENCY STORM)

STORM SEWER CALCULATIONS (5-YEAR FREQUENCY STORM)

DRAINAGE AREA	FROM MH	TO MH	AREA (ac)	CUM. AREA (ac)	RUNOFF COEFF. C	C*A	SUM OF C*A	TIME OF CONC. (min)	INTENSITY i (in/hr)	SUM OF FLOWS (cfs)	REACH LENGTH (ft)	DIAM OR RISE (in)	SPAN (in)	AREA (sf)	SLOPE (%)	MANNINGS "N"	DESIGN CAPACITY (cfs)	DESIGN VELOCITY (fps)	FALL (ft)	MH DROP (ft)	FLOWLINE UP STREAM (ft)	FLOWLINE DOWN STREAM (ft)	ACTUAL VELOCITY (fps)	HYDRAULIC GRADIENT (%)	CHANGE IN HEAD (ft)	HYD GRAD UP STREAM (ft)	HYD GRAD DOWN STREAM (ft)	GUTTER UP STREAM (ft)	
SYSTEM (5 Year)																													
1	I-1	OUT	4.0788	4.0788	0.95	3.875	3.875	25.57	4.63	17.95	68	42	0	9.62	0.10	0.013	31.90	3.32	0.07	0.00	36.37	36.30	1.87	0.032	0.02	39.82	39.80	42.80	HGL OK

STORM SEWER CALCULATIONS (100-YEAR FREQUENCY STORM)

DRAINAGE AREA	FROM MH	TO MH	AREA (ac)	CUM. AREA (ac)	RUNOFF COEFF. C	C*A	SUM OF C*A	TIME OF CONC. (min)	INTENSITY i (in/hr)	SUM OF FLOWS (cfs)	REACH LENGTH (ft)	DIAM OR RISE (in)	SPAN (in)	AREA (sf)	SLOPE (%)	MANNINGS "N"	DESIGN CAPACITY (cfs)	DESIGN VELOCITY (fps)	FALL (ft)	MH DROP (ft)	FLOWLINE UP STREAM (ft)	FLOWLINE DOWN STREAM (ft)	ACTUAL VELOCITY (fps)	HYDRAULIC GRADIENT (%)	CHANGE IN HEAD (ft)	HYD GRAD UP STREAM (ft)	HYD GRAD DOWN STREAM (ft)	GUTTER UP STREAM (ft)	
SYSTEM (100 Year)																													
1	I-1	OUT	4.0788	4.0788	0.95	3.875	3.875	25.57	7.98	30.90	68	42	0	9.62	0.10	0.013	31.90	3.32	0.07	0.00	36.37	36.30	3.21	0.094	0.06	39.87	39.80	42.80	HGL OK

151313 - I&D LEGECY COMMERCIAL PARK
DETENTION POND STORAGE CALCULATIONS

WATER ELEVATION (ft)	DEPTH, h (ft)	CONST WSEL SURFACE AREA (sq-ft)	TOP SURFACE AREA (sq-ft)	AVERAGE SURFACE AREA (sq-ft)	CUMULATIVE VOLUME (ac-ft)	CUMULATIVE VOLUME (ac-ft)	
38.50	0.00	111,558.7	111,558.7	111,558.7	0.000	0.000	CONSTANT WSE
39.50	1.00	111,558.7	117,783.2	114,671.0	114,670.950	2.632	
39.70	1.20	111,558.7	119,052.7	115,305.7	138,366.840	3.176	5-YEAR WSEL
40.23	1.73	111,558.7	122,421.2	116,990.0	202,392.614	4.646	
40.50	2.00	111,558.7	124,109.1	117,833.9	235,667.800	5.410	10-YEAR WSEL
41.50	3.00	111,558.7	130,535.4	121,047.1	363,141.150	8.337	100-YEAR WSEL
42.50	4.00	111,558.7	137,062.4	124,310.6	497,242.200	11.415	

PROJECT NAME: I&D LEGECY COMMERCIAL PARK
BRAZORIA COUNTY RAINFALL INTENSITY VALUES

COEFFICIENT	5-YEAR	10-YEAR	25-YEAR	100-YEAR
b	58.019	57.515	52.780	46.316
d	9.236	7.777	5.022	1.555
e	0.712	0.676	0.618	0.533

15313 - I&D LEGECY COMMERCIAL PARK
RESTRICTIVE OUTLET WITH MAX. FLOW RATE OF 10.18 CFS AND 2.00' HEAD

A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	H.C.F.C.D. EQUATION FOR A HDPE PIPE WITH KNOWN "L", "n", "D" AND ASSUMED "H"												
2	H"	Q"	ENTR.	n	L	D		EQ.	EQ.	EQ.	EQ.	EQ.	EQ.
3			LOSS					2.5204(1+D4)	466.18*E4^2*F4	B4/(C4/10)^2	I4/G4^4	J4/G4^5.333	L4-(L4+M4)
4	2.00	3.06	0.5	0.013	4	0.67		3.7806	0.3151	21.4284	18.7612	2.6671	0.0000
5	2.00	4.76	0.5	0.013	4	0.83		3.7806	0.3151	8.8174	7.9661	0.8512	0.0000
6	2.00	6.99	0.5	0.013	4	1		3.7806	0.3151	4.0957	3.7806	0.3151	0.0000
7	2.00	11.03	0.5	0.013	4	1.25		3.7806	0.3151	1.6444	1.5485	0.0959	0.0000

ORIFICE EQUATION	
Q = Cd*A*(2*G*H)^0.5	
Where:	
Cd =	0.8
G =	32.2
H =	2
Q =	10.18
A =	1.12

USE 12" Dia.= 0.79 SF
(File: 15313 / HCFCD PIPE FLOW RATE)
USE 12' RESTRICTOR

15313 - I&D LEGECY COMMERCIAL PARK
TIME OF CONCENTRATION CALCULATIONS

Tc = D / (60 * V) + Ti

	UNDEVELOPED Tc		DEVELOPED Tc	
INITIAL TIME	15.00	MIN	10.00	MIN
D (THICK VEGETATION)	0.00	FT	0.00	FT
V (THICK VEGETATION)	0.25	FPS	0.35	FPS
D (GRASS)	386.00	FT	467.00	FT
V (GRASS)	0.35	FPS	0.50	FPS
D (BARE GROUND)	0.00	FT	0.00	FT
V (BARE GROUND)	0.50	FPS	1.00	FPS
D (PAVED AREAS)	0.00	FT	0.00	FT
V (PAVED AREAS)	1.50	FPS	1.50	FPS
D (DITCH/CAHNNEL)	0.00	FT	486.00	FT
V (DITCH/CHANNEL)	2.00	FPS	2.50	FPS
D (STORM SEWER)	0.00	FT	101.00	FT
V (STORM SEWER)	3.00	FPS	3.00	FPS
TIME OF CONCENTRATION	33.38	MIN	29.37	MIN

15313 - I&D LEGECY COMMERCIAL PARK
TIME OF CONCENTRATION CALCULATIONS

Q = Cf * C * I * A

	5-YEAR UNDEVELOPED		5-YEAR DEVELOPED		10-YEAR UNDEVELOPED		10-YEAR DEVELOPED		100-YEAR UNDEVELOPED		100-YEAR DEVELOPED	
AREA (A)	8.4625	ac	8.4625	ac	8.4625	ac	8.4625	ac	8.4625	ac	8.4625	ac
TIME OF CONCETRATION (Tc)	33.38	min	29.37	min	33.38	min	29.37	min	33.38	min	29.37	min
b	58.019		58.019		57.515		57.515		46.316		46.316	
d	9.236		9.236		7.777		7.777		1.555		1.555	
e	0.712		0.712		0.676		0.676		0.533		0.533	
RAINFALL INTENSITY (I)	4.01	in/hr	4.30	in/hr	4.66	in/hr	4.99	in/hr	6.97	in/hr	7.44	in/hr
RUNOFF COEFFICIENT (C)	0.30		0.95		0.30		0.95		0.30		0.95	
CORRECTION FACTOR (Cf)	1.00		1.00		1.10		1.10		1.25		1.25	
C *Cf (<= 1.0)	0.30		0.95		0.33		1.00		0.38		1.00	
RUNOFF (Q)	10.18	cfs	34.60	cfs	13.01	cfs	42.27	cfs	22.12	cfs	62.94	cfs

15313 - I&D LEGECY COMMERCIAL PARK
EMERGENCY SPILLWAY SIZING

Q = 1.49 / n * A * R^2/3 * S^1/2

COEFFICIENT OF ROUGHNESS (n) =	0.015	SMOOTH CONCRETE PAVEMENT
DEPTH (d) =	1.00	ft
BOTTOM WIDTH (b) =	13.00	ft
SIDE SLOPE =	6	:1
AREA (A) =	19.00	sq-ft
WETTED PERIMETER (P) =	25.17	ft
HYDRAULIC RADIUS (R) =	0.755	ft
SLOPE (S) =	0.0017	ft/ft
CAPACITY (Q) =	64.52	cfs
REQUIRED CAPACITY =	62.93	cfs

15313 - I&D LEGECY COMMERCIAL PARK
EMERGENCY SPILLWAY SIZING

Q = CLH^3/2

L = Q / [C*(H)^3/2)

Q =	62.94	cfs
C =	2.6	
H =	1.0	ft
L =	24.21	ft

USE L = 25'

DETENTION CALCULATIONS
TOTAL AREA OF SITE = 11.00 ACRES

AREA OF DEVELOPMENT AND DETENTION POND
A = 8.4625 ACRES

PROPOSED CONDITION 100-YEAR STORM
Q=CfCIA (Cf*C = 1.25*0.95 = 1.19> 1.0 USE 1.0)
C = 0.95
TC = 29.37 MIN
I100 = 7.437 IN/HR
A = 8.4625 ACRES
Q100 = 62.934 CFS

PREDEVELOPMENT FLOW RATE CALCULATION 100-YEAR STORM
Q100 =CIA x 1.25 PK
C = 0.30 (SITE HAS BEEN PARTIALLY FILLED AND GRADED)
TC = 33.38 MIN
I100 = 6.696 IN/HR
A = 8.4625 ACRES
Q100 = 22.116 CFS

PROPOSED CONDITION 25-YEAR STORM
Q=CfCIA (Cf*C = 1.10*0.95 = 1.04> 1.0 USE 1.0)
C = 0.95
TC = 29.37 MIN
I25 = 5.928 IN/HR
A = 8.4625 ACRES
Q25 = 50.166 CFS

PREDEVELOPMENT FLOW RATE CALCULATION 25-YEAR STORM
Q25 =CIA X 1.10 PK
C = 0.30 (SITE HAS BEEN PARTIALLY FILLED AND GRADED)
TC = 33.38 MIN
I25 = 5.538 IN/HR
A = 8.4625 ACRES
Q25 = 15.466 CFS

PROPOSED CONDITION 10-YEAR STORM
Q=CfCIA (Cf*C = 1.10*0.95 = 1.04> 1.0 USE 1.0)
C = 0.95
TC = 29.37 MIN
I10 = 4.995 IN/HR
A = 8.4625 ACRES
Q10 = 42.268 CFS

PREDEVELOPMENT FLOW RATE CALCULATION 10-YEAR STORM
Q10 =CIA X 1.10 PK
C = 0.30 (SITE HAS BEEN PARTIALLY FILLED AND GRADED)
TC = 33.38 MIN
I100 = 4.660 IN/HR
A = 8.4625 ACRES
Q10 = 13.015 CFS

PROPOSED CONDITION 5-YEAR STORM
Q=CIA X 1.00 PK
C = 0.95
TC = 29.37 MIN
I100 = 4.304 IN/HR
A = 8.4625 ACRES
Q5 = 34.601 CFS

PREDEVELOPMENT FLOW RATE CALCULATION 5-YEAR STORM
Q5 =CIA x 1.00 PK
C = 0.30 (SITE HAS BEEN PARTIALLY FILLED AND GRADED)
TC = 33.38 MIN
I5 = 4.012 IN/HR
A = 8.4625 ACRES
Q5 = 10.184 CFS

100-YEAR DETENTION REQUIRED = 353,881 CF = 8.124 AC-FT

POND INFORMATION

TOP BANK ELEVATION= 42.50'
ELEVATION TOP (100 YEAR WSEL= 41.50')= 130,535.4 SF
ELEVATION AT CONSTANT WSEL (EL=38.50')= 111,558.7 SF
AVERAGE DETENTION AREA= 121,047.1 SF
DETENTION DEPTH= 3.00 FT
DETENTION= 363,141.2 CF = 8.337 AC-FT

DETENTION PROVIDED FOR DEVELOPMENT AND DETENTION POND= 363,141.2 CF = 8.337 AC-FT
DETENTION RATE PROVIDED= 0.985 AC-FT/AC

DETENTION PROVIDED FOR TOTAL SITE INCLUDING EXIST DEVELOPMENT= 363,141.2 CF = 8.337 AC-FT
DETENTION RATE PROVIDED= 0.757 AC-FT/AC

10-YEAR DETENTION REQUIRED = 0.57 * 353,881 CF = 201,712 CF = 4.631 AC-FT

POND INFORMATION

TOP BANK ELEVATION= 42.50'
ELEVATION TOP (10 YEAR WSEL= 40.50')= 124,109.1 SF
ELEVATION AT CONSTANT WSEL (EL=38.50')= 111,558.7 SF
AVERAGE DETENTION AREA= 117,833.9 SF
DETENTION DEPTH= 2.00 FT
DETENTION= 235,667.8 CF = 5.410 AC-FT

DETENTION PROVIDED= 235,667.8 CF = 5.410 AC-FT

5-YEAR DETENTION REQUIRED = 0.39 * 353,881 CF = 138,014 CF = 3.168 AC-FT

POND INFORMATION

TOP BANK ELEVATION= 42.50'
ELEVATION TOP (5 YEAR WSEL= 39.70')= 119,052.7 SF
ELEVATION AT CONSTANT WSEL (EL=38.50')= 111,558.7 SF
AVERAGE DETENTION AREA= 1150305.7 SF
DETENTION DEPTH= 1.20 FT
DETENTION= 138,366.8 CF = 3.176 AC-FT

DETENTION PROVIDED= 138,366.8 CF = 3.176 AC-FT

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

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HORIZONTAL:
VERTICAL:

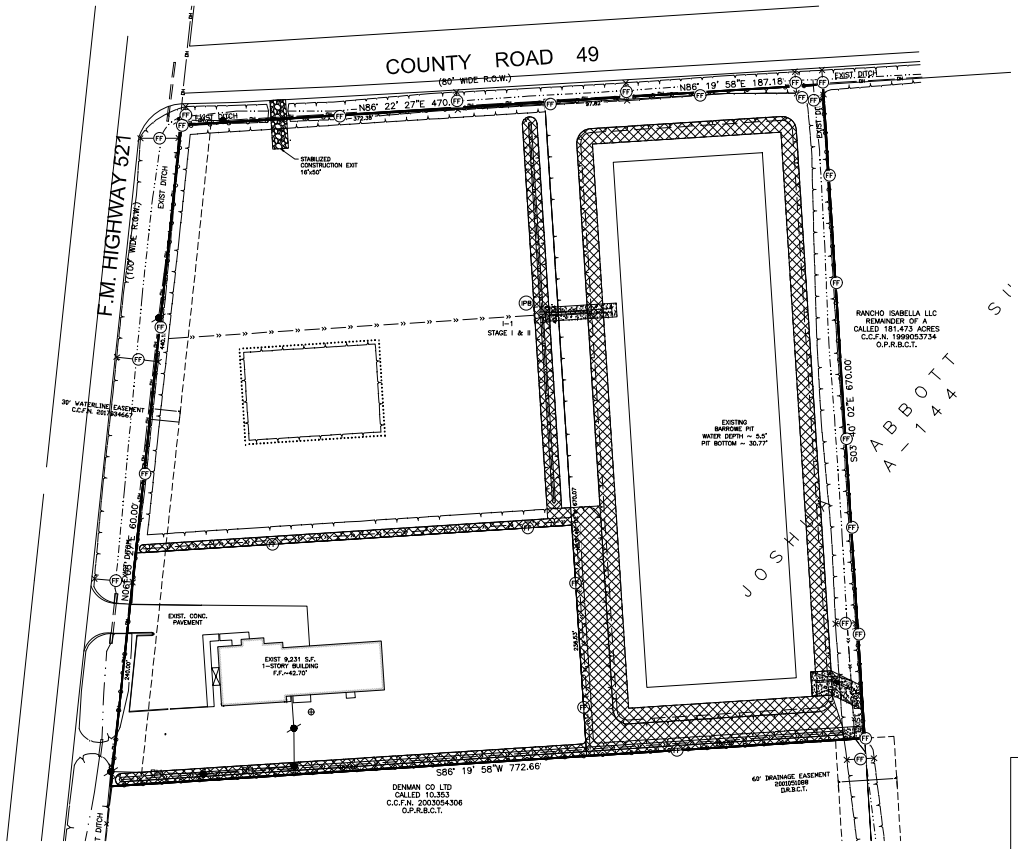
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

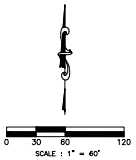
DRAINAGE CALCULATIONS

PROJECT NO. 15313

C.7

15313 SHEET SET.dwg

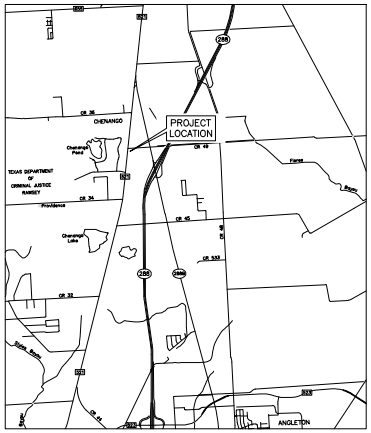




NOTE:

ADEQUATE EROSION CONTROL AND RE-VEGETATION SHALL BE ACCOMPLISHED DURING AND FOLLOWING CONSTRUCTION OF THE DETENTION FACILITY.

FOR DETENTION PONDS, 95% TURF GERMINATION SHALL BE ACHIEVED ON THE MAINTENANCE BERMS, SIDE SLOPES, AND BOTTOM TO PREVENT EROSION.



PROJECT/SITE INFORMATION

PROJECT NAME: DEVELOPMENT FOR MSR HOUSTON SHOWROOM & GARAGE

PROJECT ADDRESS/LOCATION: CR 48 AT SH 288

CITY: ANGLETON STATE: TX. ZIP CODE: 77515

LATITUDE: 29°16'44.10"N LONGITUDE: 95°25'47.29"W COUNTY: BRAZORIA

NAME OF RECEIVING WATERS: FLORES BAYOU SYSTEM TO GULF OF MEXICO

08/01/21 — MONTH/DAY/YEAR — ESTIMATED CONSTRUCTION START DATE

06/01/22 — MONTH/DAY/YEAR — ESTIMATED COMPLETION DATE

ESTIMATE OF AREA TO BE DISTURBED: 9.898 ACRES

ESTIMATE OF LIKELYHOOD OF DISCHARGE:

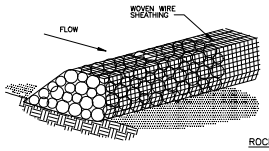
☐ UNLIKELY ☐ ONCE PER WEEK ☐ CONTINUAL
☒ ONCE PER MONTH ☐ ONCE PER DAY

ARE THERE ANY LISTED ENDANGERED OR THREATENED SPECIES, OR DESIGNATED CRITICAL HABITAT IN THE PROJECT AREA?

☐ YES ☒ NO

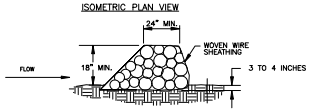
ELIGIBILITY WITH REGARD TO PROTECTION OF ENDANGERED SPECIES HAS BEEN SATISFIED THROUGH THE INDICATED SECTION OF PART 1.B.3.e.(2) OF THE PERMIT. x

(a) ☐ (b) ☐ (c) ☐ (d) ☐



ROCK BERM DETAIL
N.T.S.

ISOMETRIC PLAN VIEW



CROSS SECTION
N.T.S.

ROCK BERM GENERAL NOTES

1. USE ONLY OPEN GRADED ROCK 4-8 INCHES IN DIAMETER FOR STREAM FLOW CONDITION. USE OPEN GRADED ROCK 3-5 INCHES IN DIAMETER FOR OTHER CONDITIONS.

2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING A MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE SIZE OF 20 GAUGE AND SHALL BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP.

3. THE ROCK BERM SHALL BE INSPECTED EVERY TWO WEEKS OR AFTER EACH 1/2" RAIN EVENT AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTEDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE BERM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.

5. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

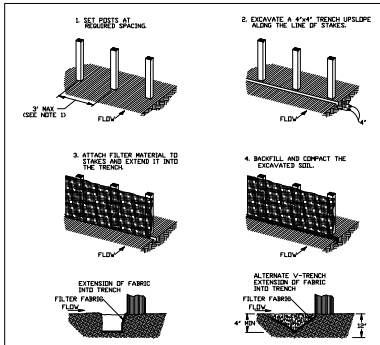
6. ROCK BERM SHOULD BE USED AS CHECK DAMS FOR CONCENTRATED FLOW AND ARE NOT INTENDED FOR USE IN PERIMETER PROTECTION.

IF DEWATERING METHODS ARE TO BE UTILIZED, THE DISCHARGE SHALL BE FILTERED USING SEDIMENT TANKS OR SEDIMENT FILTER BAGS TO REMOVE SEDIMENT AND OTHER POLLUTANTS BEFORE THE WATER ENTERS A STORM DRAIN OR LEAVE THE SITE.

IF DISCHARGE OF SOIL OR OTHER POLLUTANTS OCCURS, THE CONTROL MEASURES SHALL BE EVALUATED AND CHANGES OR ADDITIONAL MEASURES IMPLEMENTED WITHIN 48 HOURS TO PREVENT FUTURE DISCHARGES.

DAMAGE TO ADJACENT PROPERTY AND/OR RECEIVING WATER CAUSED BY IMPROPERLY INSTALLED OR POORLY MAINTAINED EROSION AND POLLUTION CONTROL MEASURES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS RESPONSIBILITY INCLUDES REMOVAL AND DISPOSAL OF ANY SILTATION, DEBRIS, OR OTHER POLLUTANTS CAUSED BY HIS/HER OPERATIONS AND/OR FAILURE OF THE CONTROL MEASURES. FAILURE TO ADDRESS THE CAUSES OF DAMAGES WILL RESULT IN A STOP WORK ORDER.

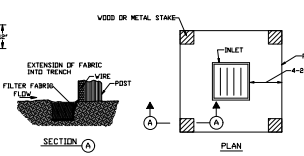
ADDITION NOTES ARE PROVIDED ON SWPPP NARRATIVE SHEET



CONSTRUCTION NOTES:

1. 1 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.

FILTER FABRIC FENCE



SILT FENCE PROTECTION BARRIER

LEGEND

- SILT FENCE AROUND STRUCTURE UNDER CONSTRUCTION
- SILT FENCE ACROSS EXISTING DITCH REINFORCED FILTER BARRIER
- HYDROMULCH SEED

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-4681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS — RANDALL J. LISKA 89374 — REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374
Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: 1" = 60'
PROFILE:
HORIZONTAL:
VERTICAL:

I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

SWPPP LAYOUT AND DETAILS

PROJECT NO. 15313

C.8

15313 SHEET SET.dwg

1. SITE DESCRIPTION

A. NATURE OF THE CONSTRUCTION ACTIVITY:
THE PROJECT CONSISTS OF THE FILLING AND GRADING OF THE LOT AND CONSTRUCTION OF A BUILDING PAD DETENTION IN BRAZORIA COUNTY, TEXAS. THE SITE IS LOCATED ON THE SOUTHEAST CORNER OF FM 521 AND CR 49. I&D COMMERCIAL PARK SITE HAS FM 521 AND CHENANGO RANCH TO THE WEST, CR 49 AND COMMERCIAL DEVELOPMENTS TO THE NORTH, UNDEVELOPED LAND TO THE EAST AND SOUTH. CONSTRUCTION SHALL CONSIST OF ONE 45854 CF WET DETENTION POND, ONE BUILDING PAD AND FILL OF THE SITE.

B. INTENDED SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES:
THE WORK AREA WILL BE CLEARED OF ALL VEGETATIVE MATTER. THE PROPOSED BUILDING PAD WILL BE CONSTRUCTED. THE DETENTION POND WILL BE EXCAVATED AND MATERIAL WILL BE SPREAD ON THE SITE. STORM WATER FROM THE SITE WILL BE DIRECTED TO AN INLET THEN TO THE DETENTION POND. TRUCKS WILL BE USED TO HAUL WASTE FROM CONSTRUCTION AND DELIVER BASE MATERIAL AND CONSTRUCTION MATERIAL TO THE SITE. THESE TRUCKS WILL BE ROUTED ALONG CR 49 FOR INGRESS AND EGRESS. RUTTING ON SITE DURING WET WEATHER WILL PROVIDE POTENTIAL FOR TRACKING MUD ALONG CR 49. MUD/DIRT WILL BE CLEAN OFF OF CR 49 DAILY.

C. TOTAL PROJECT AREA: 11.000 ACRES

D. TOTAL AREA TO BE DISTURBED: 8.4625 ACRES

WEIGHTED RUNOFF COEFFICIENT
(BEFORE CONSTRUCTION): 0.30 (AFTER CONSTRUCTION): 0.95

E. REFER TO GENERAL LOCATION MAP AND SITE MAP FOR DRAINAGE PATTERNS AND APPROXIMATE SLOPES ANTICIPATED AFTER MAJOR GRADING ACTIVITIES; AREAS OF SOIL DISTURBANCE; AREAS WHICH WILL NOT BE DISTURBED; LOCTIONS OF MAJOR STRUCTURAL AND NON-STRUCTURAL CONTROLS; LOCATIONS WHERE STABILIZATION PRACTICES ARE EXPECTED TO OCCUR; LOCATION OF OFF-SITE MATERIAL, WASTE, BORROW OR EQUIPMENT STORAGE AREAS; SURFACE WATERS (INCLUDING WETLANDS); AND LOCATIONS WHERE STORM WATER DISCHARGES TO A SURFACE WATER.

F. LOCATION AND DESCRIPTION OF ANY DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY OTHER THAN CONSTRUCTION:
NONE

G. NAME OF RECEIVING WATERS:
DRAINAGE WILL BE COLLECTED IN THE PROPOSED DETENTION POND. STORMWATER WILL BE GRAVITY DRAINED TO A MANHOLE, WHICH WILL DRAIN THRU AN 12" PVC RESTRICTIVE OUTLET INTO THE DRAINAGE SWALE LOCATED ON THE EAST SIDE OF THE SITE. WATER IN THE DETENTION POND SYSTEM OUTFALLS INTO AN ONSITE DITCH, THEN TO A DRAINAGE DITCH TO THE SOUTH, THEN TO FLORES BAYOU WHICH OUTFALLS INTO THE GULF OF MEXICO.

AREAL EXTENT AND DESCRIPTION OF WETLAND OR SPECIAL AQUATIC SITE AT OR NEAR THE SITE WHICH WILL BE DISTURBED OR WHICH WILL RECEIVE DISCHARGES FROM DISTURBED AREAS OFTHE PROJECT.
NONE

H. REFER TO FEDERAL REGISTER, VOLUME 63, NO.128, MONDAY JULY 6, 1998, PAGES 36497 TO 36515 FOR REQUIREMENTS OF NPDES GENERAL PERMITS FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES IN REGION 6.

I. LISTED ENDANGERED OR THREATENED SPECIES OR CRITICAL HABITAT FOUND IN PROXIMITY TO THE CONSTRUCTION ACTIVITY:
NONE

J. PROPERTY LISTED OR ELIGIBLE FOR LISTING ON THE NATIONAL REGISTER OF HISTORIC PLACES:
NONE

2. CONTROLS

NARRATIVE – SEQUENCE OF CONSTRUCTION ACTIVITIES AND APPROPRIATE CONTROL MEASURES DURING CONSTRUCTION

1. TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSTALLED AS INDICATED ON THE APPROVED PLAN AND IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) THAT IS REQUIRED TO BE POSTED AT THE SITE.
2. THE GENERAL CONTRACTOR WILL FOLLOW THE SWPPP POSTED ON THE SITE. TEMPORARY EROSION AND SEDIMENTATION CONTROLS WILL BE REVISED, IF NEEDED, TO COMPLY WITH THE INSPECTOR'S (BRAZORIA COUNTY AND BRAZORIA COUNTY DRAINAGE DISTRICT #5) DIRECTIVE, AND THE REVISED CONSTRUCTION SCHEDULE RELATIVE TO THE REQUIREMENTS AND EROSION PLAN.
3. ROUGH GRADE THE POND(S) AT 100% PROPOSED CAPACITY. EITHER THE PERMANENT OUTLET STRUCTURE OR A TEMPORARY OUTLET MUST BE CONSTRUCTED PRIOR TO THE DEVELOPMENT OF EMBANKMENT OR EXCAVATION THAT LEADS TO PONDING CONDITIONS. THE OUTLET SYSTEM MUST CONSIST OF SUMP PIT OUTLET AND EMERGENCY SPILLWAY AS REQUIRED. THE OUTLET SYSTEM SHALL BE PROTECTED FROM EROSION AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION UNTIL INSTALLATION OF PERMANENT WATER QUALITY POND(S).
4. TEMPORARY EROSION AND SEDIMENTATION CONTROLS WILL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE SWPPP POSTED ON SITE.
5. BEGIN SITE CLEARING/CONSTRUCTION (OR DEMOLITION) ACTIVITIES.
6. CONSTRUCT PROPOSED ON-SITE DRAINAGE CHANNELS WITH CULVERT, ALONG WITH STORM SEWER SYSTEM INTO AND OUT OF POND.
7. POND OR CONTROLS WILL BE CLEANED OUT AND FILTER MEDIA WILL BE INSTALLED PRIOR TO/CONCURRENTLY WITH REVEGETATION OF SITE.
8. COMPLETE CONSTRUCTION AND START REVEGETATION OF THE SITE. HYDROMULCH SEEDING OF POND, AND INSTALLATION OF LANDSCAPING.
9. AFTER A FINAL INSPECTION HAS BE CONDUCTED, REMOVE THE TEMPORARY EROSION AND SEDIMENTATION CONTROLS AND COMPLETE ANY NECESSARY FINAL REVEGETATION RESULTING FROM REMOVAL OF THE CONTROL.

SOIL STABILIZATION PRACTICES:	OWNER/ DEVELOPER	GENERAL CNTRTR.	BUILDER	OTHER
TEMPORARY SEEDING				
PERMANENT PLANTING, SODDING, OR SEEDING		X		
MULCHING– WHERE INDICATED				
SOIL RETENTION BLANKET				
VEGETATIVE BUFFER STRIPS				
PRESERVATION OF NATURAL RESOURCES				
OTHER:				

THE FOLLOWING RECORDS SHALL BE MAINTAINED AND ATTACHED TO THIS SWPPP:
DATES WHEN MAJOR GRADING ACTIVITIES OCCUR, DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, DATES WHEN STABILIZATION MEASURES ARE INITIATED.

STRUCTURAL PRACTICES:	OWNER/ DEVELOPER	GENERAL CNTRTR.	BUILDER	OTHER
SILT FENCES		X		
HAY BALES				
ROCK BERMS				
DIVERSION, INTERCEPTOR, OR PERIMETER DIKES				
DIVERSION, INTERCEPTOR, OR PERIMETER SWALES				
DIVERSION DIKE AND SWALE COMBINATIONS				
PIPE SLOPE DRAINS				
ROCK BEDDING AT CONSTRUCTION EXIT		X		
TIMBER MATTING AT CONSTRUCTION EXIT				
SEDIMENT TRAPS				
SEDIMENT BASINS				
STORM INLET PROTECTION		X		
STONE OUTLET STRUCTURES				
OTHER:				

B. STORM WATER MANAGEMENT MEASURES INSTALLED DURING CONSTRUCTION TO CONTROL POLLUTANTS IN STORM WATER DISCHARGES THAT WILL OCCUR AFTER CONSTRUCTION:
STORM SEWERS; WET DETENTION

C. OTHER CONTROLS

NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED TO WATERS OF THE UNITED STATES, EXCEPT AS AUTHORIZED BY A PERMIT ISSUED UNDER SECTION 404 OF THE CLEAN WATER ACT.

WASTE MATERIALS: ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL CONTAINER. THE CONTAINER SHALL MEET ALL STATE AND CITY SOLID WASTE MANAGEMENT REGULATIONS. THE CONTAINER SHALL BE EMPTIED AS NECESSARY AND THE TRASH HAULED TO AN APPROPRIATE DUMP SITE. NO CONSTRUCTION MATERIALS WILL BE BURIED ON SITE.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING)AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS: PAINT, CLEANING SOLVENTS, ASPHALT PRODUCTS, PETROLEUM PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, AND CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE SPILL COORDINATOR SHOULD BE CONTACTED IMMEDIATELY.

SANITARY WASTE: PORTABLE SANITARY FACILITIES WILL BE PROVIDED BY THE CONTRACTOR. ALL SANITARY WASTES WILL BE COLLECTED FROM PORTABLE UNITS AND SERVICED BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

OFFSITE VEHICLE TRACKING SHALL BE MINIMIZED BY:
___ HAUL ROADS DAMPENED FOR DUST CONTROL LOADED
X HAUL TRUCKS TO BE COVERED WITH TARPAULIN
X EXCESS DIRT ON ROAD REMOVED DAILY
X STABILIZED CONSTRUCTION ENTRANCE

OTHER: TRUCKS HAULING VEGETATION AND DEBRIS WILL BE MONITORED AND SHALL BE COVERED WITH TARPAULINS IF REQUIRED TO PREVENT DUST OR OTHER PARTICLES FROM BLOWING OR FALLING FROM TRUCK.

REMARKS: ALL OPERATIONS WILL BE CONDUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNTS OF SEDIMENT THAT MAY ENTER THE RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATERBODY, OR STREAMBED. CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS.

3. MAINTENANCE

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. IF A REPAIR IS NECESSARY IT SHALL BE DONE AT THE EARLIEST TIME POSSIBLE, BUT NO LATER THAN SEVEN CALENDAR DAYS AFTER THE GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT. THE AREAS ADJACENT TO DRAINAGE WAYS SHALL HAVE PRIORITY, FOLLOWED BY DEVICES PROTECTING STORM SEWER INLETS. MAINTENANCE SHALL BE PERFORMED BEFORE THE NEXT ANTICIPATED STORM EVENT OR AS SOON AS PRACTICABLE.

4. INSPECTION

AN INSPECTION WILL BE PERFORMED BY THE PERMITEE EVERY FOURTEEN DAYS AS WELL AS AFTER EVERY ONE-HALF INCH OR GREATER RAINFALL EVENT. AN INSPECTION AND RAINFALL REPORT WILL BE MADE AFTER EACH INSPECTION. ANY DEFICIENCIES WILL BE NOTED AND APPROPRIATE CHANGES SHALL BE MADE TO THE SYSTEM TO COMPLY WITH REQUIREMENTS.

5. NON-STORMWATER DISCHARGES

___ FIRE HYDRANT FLUSHING
___ BUILDING WASHDOWN WITHOUT DETERGENTS
___ PAVEMENT WASHDOWN WITHOUT DETERGENTS
___ CONDENSATE
X UNCONTAMINATED GROUNDWATER
___ UNCONTAMINATED FOUNDATION DRAINS

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-4681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS RANDALL J. LISKA 89374 REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374
Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: N.T.S.
PROFILE:
HORIZONTAL:
VERTICAL:

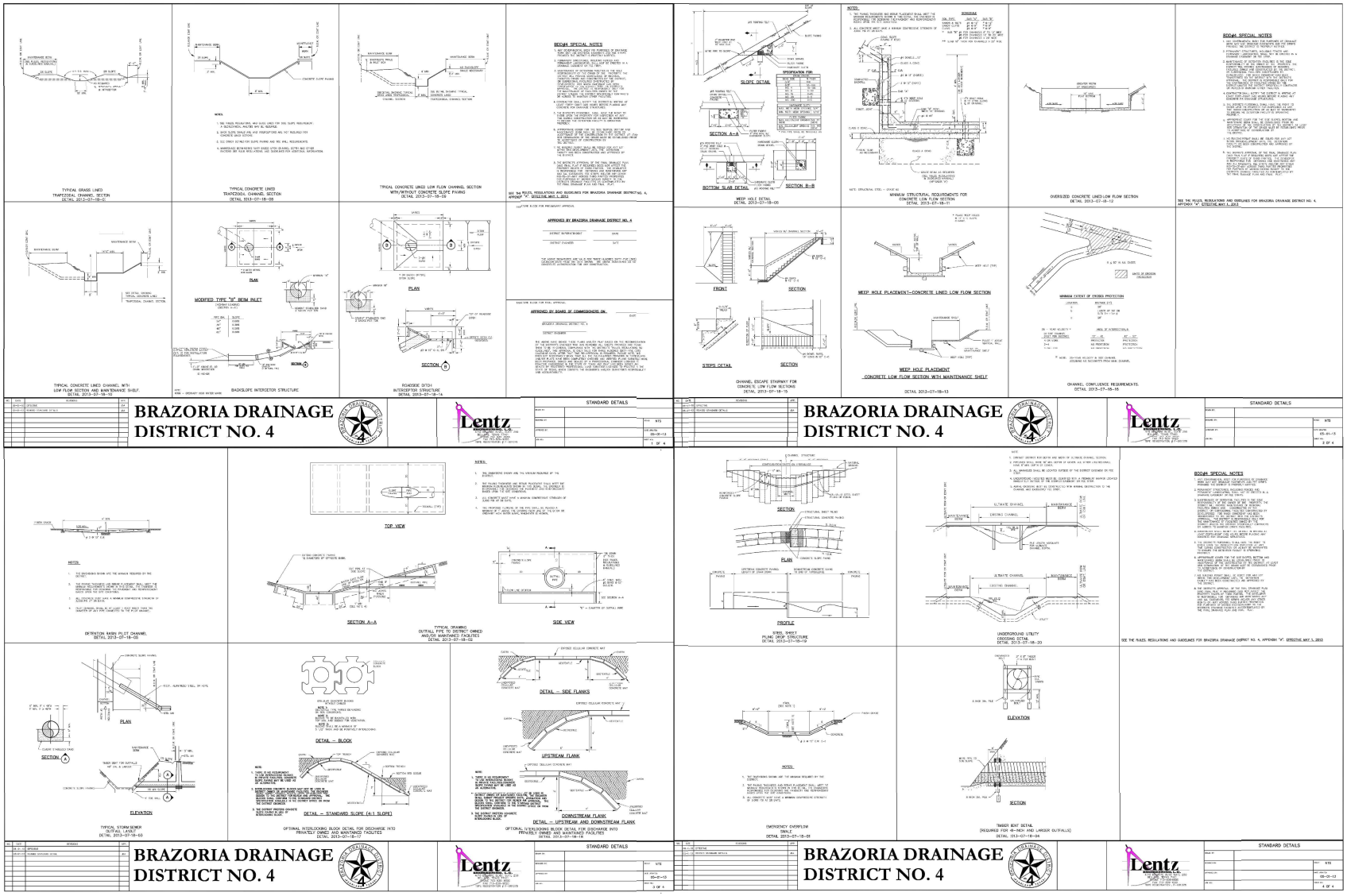
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

SWPPP NARRATIVE

PROJECT NO. 15313

C.9

15313 SHEET SET.dwg



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STATE OF TEXAS
RANDALL J. LISKA
89374
REGISTERED PROFESSIONAL ENGINEER

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Date: July 24, 2023

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Mr. Alex Garcia
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Telephone: (832) 886-1053

PLAN: N.T.S.
PROFILE:
HORIZONTAL:
VERTICAL:

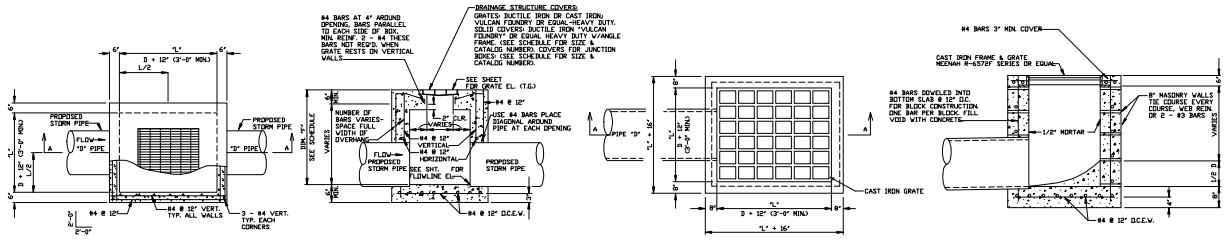
I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

STORM SEWER DETAILS
(1 of 2)

PROJECT NO. 15313

C.10

15313 SHEET SE.dwg

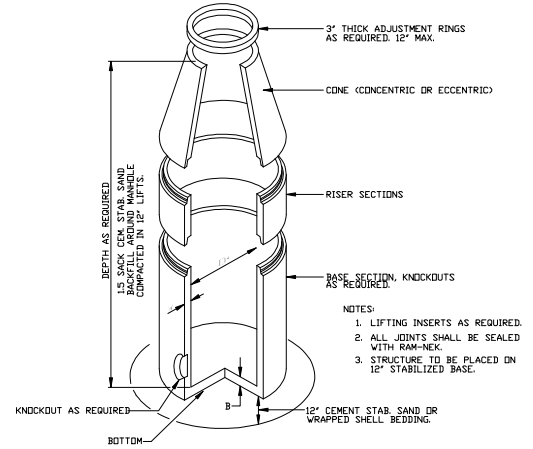


TYPE "A" INLET

N.T.S.

ALL INLETS, FRAMES, AND COVERS FOR STORM SEWER ITEMS SHALL MEET THE H-20 LOADING REQUIREMENT

NOTES:
1. ALL INTERIOR AND EXPOSED EXTERIOR SURFACES OF MASONRY WALLS SHALL RECEIVE A ONE HALF INCH (1/2") TROWELLED MORTAR FINISH.
2. REINFORCING BAR SHALL BE GRADE 60.



NOTES:
1. LIFTING INSERTS AS REQUIRED.
2. ALL JOINTS SHALL BE SEALED WITH RAM-NEK.
3. STRUCTURE TO BE PLACED ON 12" STABILIZED BASE.

NOTES:
1. STANDARD COVER MAY BE SUBSTITUTED WITH COMPATIBLE GRATED COVER WHEN UTILIZED AS AN AREA INLET.

SPECIFICATIONS

CONCRETE:	CLASS 1 CONCRETE WITH A DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. RATES FOR H-20 LOADING.
REINFORCEMENT:	STRUCTURAL REINFORCEMENT CONFORMING TO ASTM-C-476.
C.I. CASTINGS:	CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 35.

PRECAST CONCRETE STORM MANHOLE

N.T.S.

CLASS "A" BEDDING

*"A" - WASHED GRAVEL SCREENINGS PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE OR ABOVE. (ASTM D2321, CLASS 1A)

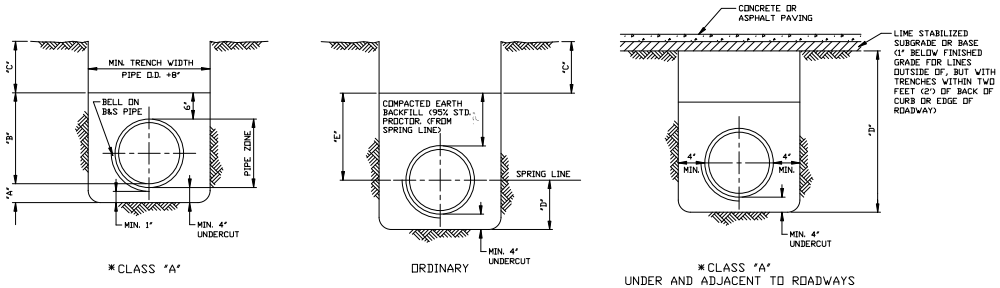
*"B" - WASHED GRAVEL SCREENINGS, THOROUGHLY RODDED, PLACED AFTER PIPE IS LAID.

"C" - EARTH FILL TO BE PLACED SAME DAY AS PIPE IS LAID.

"D" - (FOR PIPES LAID UNDER OR ADJACENT TO ROADWAYS, USE CEMENT STABILIZED SAND) 1 1/2 SK COMPACTED.

CLASS "A" BEDDING SHALL BE USED IN CUTS IN EXCESS OF 10 FEET (10') OR WHEN WET SAND IS PRESENT. WHEN WET SAND IS ENCOUNTERED, THE TRENCH SHALL BE DE-WATERED TO A STABLE CONDITION AND LINED WITH GEOTECHNICAL FABRIC PRIOR TO PLACING THE GRAVEL SCREENINGS FOR BEDDING AND BACKFILL ZONES A & B.

*CEMENT STABILIZED SAND MAY BE USED WHERE STABLE CLAY BOTTOM EXISTS.

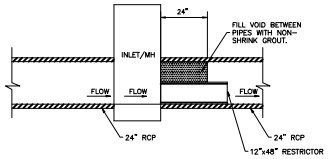


"D" ZONE - BEDDING AND BACKFILL TO SPRING LINE WITH *CEMENT STABILIZED SAND.(COMPACTED)

"E" ZONE - WHERE THE LIQUID LIMIT OF THE SOIL IN TRENCH WALLS IN THE "D-E" ZONES EXCEEDS 50, CEMENT STABILIZED SAND SHALL BE UTILIZED. (COMPACTED)

TYPICAL BEDDING FOR STORM SEWERS

N.T.S.



DETAIL
STORM 12" RESTRICTOR

N.T.S.

NO.	DATE	DESCRIPTION	APPROVED
1	06/27/23	PLAN SUBMITTAL	RJL
2	07/18/23	PLAN RESUBMITTAL PER BCDD #5 COMMENTS 1	RJL

REVISIONS

DESIGNED RJL
DRAWN RJL
CHECKED
DATE

BAKER & LAWSON, INC.
ENGINEERS • PLANNERS • SURVEYORS
300 E. CEDAR ST., ANGLETON, TEXAS 77515
PHONE: (979) 849-4681 FAX: (979) 849-4689
REG. NO. F-825

STATE OF TEXAS RANDALL J. LISKA 89374 REGISTERED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Randall J. Liska P.E. 89374

Date: July 24, 2023

OWNER:
I&D Legacy Partners, LLC
Mr. Alex Garcia
22503 FM 521
Angleton, Texas 77515
Telephone: (832) 886-1053

PLAN: N.T.S.
PROFILE:
HORIZONTAL:
VERTICAL:

I&D LEGACY COMMERCIAL PARK
11.00 ACRE TRACT
CR 49 AT FM 521
BRAZORIA COUNTY, TEXAS

STORM SEWER DETAILS
(2 of 2)

PROJECT NO. 15313

C.11

15313 SHEET SE.dwg